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**SILVER BOW CREEK/BUTTE AREA NPL SITE
BUTTE PRIORITY SOILS OPERABLE UNIT**

Final

***Quarterly Operations and Maintenance Report
Butte Treatment Lagoon System –
Third Quarter 2020***

Atlantic Richfield Company

2021



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE**

FEDERAL BUILDING, 10 West 15TH Street, Suite 3200
Helena, MT 59626-0096
Phone 866-457-2690
www.epa.gov/region8

Ref: 8MO

May 25, 2021

Mr. Josh Bryson
Operations Project Manager
Atlantic Richfield Company
317 Anaconda Road
Butte, MT 59701
On behalf of Respondents

**Re: Approval letter for: Butte Priority Soils Operable Unit (BPSOU) Revised Draft Final
Quarterly Operations and Maintenance Report Butte Treatment Lagoons System –
Third Quarter 2020 (dated April 12, 2021)**

Dear Josh:

The U.S. Environmental Protection Agency (EPA), in consultation with the Montana Department of Environmental Quality (DEQ), approves the above described report.

If you have any questions or concerns, please call me at (406) 457-5019.

Sincerely,

Nikia Greene
Remedial Project Manager

cc: (email only)
Butte File
Jenny Chambers; DEQ
Matt Dorrington, DEQ
Daryl Reed; DEQ
Jon Morgan; DEQ counsel
Carolina Balliew; DEQ
Harley Harris; NRDP
Katherine Hausrath; NRDP

Jim Ford; NRDP
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Mark Engdahl; BNSF
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David Shanight, CDM Smith
Curt Coover, CDM Smith
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Chris Wardell; EPA
Dana Barnicoat; EPA
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Ian Magruder; CTEC (Tech Advisor)
Janice Hogan; CTEC
Kristi Carroll; Montana Tech Library

SILVER BOW CREEK/BUTTE AREA NPL SITE BUTTE PRIORITY SOILS OPERABLE UNIT

Final

Quarterly Operations and Maintenance Report Butte Treatment Lagoon System – Third Quarter 2020

Prepared for:

Atlantic Richfield Company
317 Anaconda Road
Butte, Montana 59701

Prepared by:

Pioneer Technical Services, Inc.
1101 S. Montana Street
Butte, Montana 59701

2021

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Appendix C Operation and Maintenance Event, and Training Logs

DOCUMENT MODIFICATION SUMMARY

Revision No.	Author	Version	Description	Date
Rev 0	Brad Hollamon	Draft	Issued for Internal Atlantic Richfield Company Review	11/5/2020
Rev 0	Brad Hollamon	Draft Final	Issued for Agency Review	12/2/2020
Rev 0	Brad Hollamon	Revised Draft Final	Issued for Agency Review	4/12/2021
Rev 0	Brad Hollamon	Final	Issued as Final	9/10/2021

1.0 INTRODUCTION

This quarterly operations and maintenance (O&M) report summarizes water quality monitoring results and flow data collection at the Butte Treatment Lagoons (BTL) during the third quarter of 2020, the period from July 1 to September 30. Sampling station locations EFS-07 (SS-1) (effluent station), INF-04 (SS-2) (influent station), and MSD-HCC (SS-3) monitored during this period are identified in Figure 1. Various sample results and reports referenced in this text are included in Appendices A-C.

All work described in this document was performed as detailed in the BTL Groundwater Treatment System Routine Operation, Maintenance, and Monitoring (OM&M) Plan (Atlantic Richfield, 2016) (referred to as the *Routine OM&M Plan*). Refer to the Routine OM&M Plan for additional details related to sampling and monitoring tasks. Samples collected were sent to Pace Analytical Laboratory for analysis. The laboratory completed data verification and validation (Level II) according to the laboratory quality assurance procedures. All data included in this quarterly report are provided as preliminary until final data validation is complete. Preliminary analytical data results are in Appendix A.

Final validated data will be provided in the annual report submitted in March 2021. Data validation will be conducted by an independent data validator—not involved with sampling activities and who does not work for the analytical laboratory—to produce enforcement quality data for all effluent data represented in this report. Operations-related data will be validated to provide screening quality data.

2.0 SYSTEM DESCRIPTION SUMMARY

Impacted water from the West Camp Pump Station (WCP-1), Missoula Gulch baseflow, Butte Priority Soil Operable Unit (BPSOU) subdrain (subdrain), Butte Reduction Works (BRW) groundwater capture, Hydraulic Control Channel (HCC) groundwater capture, and BTL system D-cells is conveyed to the BTL collection cell, Cell D4, and then pumped from Cell D4 to the Chemical Addition System (CAS) building as influent flow, where pre-treatment water quality is monitored at SS-2. The influent flow is mixed with lime slurry to reach a target pH, which allows dissolved heavy metals to precipitate and separate from the collected groundwater as treated water flows through a series of lagoon cells in the remainder of the BTL system. The lime slurry is created by adding dry calcium hydroxide, delivered by an accurate measurement system measured by milligrams of lime (calcium hydroxide) per liter (mg/L) of influent water, to a portion of the influent water. The slurry is then added back to the remainder of the influent, and pH-adjusted influent flow is directed to three parallel lagoon cell systems. Each system consists of three, unlined, open water cells operating in parallel: A, B, and C, where the A system is to the north and C to the south. The primary purpose of the first cell is to allow the chemical reaction to occur, introduce additional carbon dioxide to the system, and to capture sediment and chemical precipitates. A fourth series of smaller, non-treatment cells, the D cells, is to the south of lagoons A2 and A3. The D cells act as hydraulic barriers between the treatment cells and Silver Bow Creek. Treated effluent water is then discharged to Silver Bow Creek at the effluent station, SS-1.

3.0 MONITORING

Water quality samples are typically collected using automated ISCO samplers programmed to collect composite samples over a 24-hour period. Sample stations and monitoring locations are shown on Figure 1. These composite samples are collected automatically twice each week at EFS-07 (SS-1) and once each week at INF-04 (SS-2). Field grab samples are collected at station MSD-HCC (SS-3) monthly. Samples are analyzed for total recoverable metals (aluminum, arsenic, cadmium, copper, iron, mercury, lead, silver, zinc, calcium, magnesium, uranium) and hardness.

In addition to total recoverable metals analysis, samples are also analyzed for alkalinity, total dissolved solids, total suspended solids, and nitrates/nitrites once per month. Quality control samples, field blank (SS-4) and field duplicate (T), are collected monthly. Field parameters are collected daily at many points within the system and real-time data are collected by an automated monitoring system.

Analytical results are compared to “end of pipe” discharge standards, defined as the lesser of the chronic or human health standard specified in the Montana Department of Environmental Quality (DEQ) Circular DEQ-7 (DEQ, 2006), and referenced in Table 8-2 of the U.S. Environmental Protection Agency (EPA) BPSOU Record of Decision (ROD) (Section 12.6.3.1) (EPA, 2006). All reported total recoverable aluminum values are below the dissolved standard. In the event the total recoverable value exceeds the dissolved standard for aluminum, additional analysis will be performed on the dissolved sample to provide the dissolved fraction present in the sample. The dissolved aluminum results will then be reported and compared to the dissolved standard.

The DEQ-7 aquatic life standards for cadmium, copper, lead, silver, and zinc are dependent on effluent hardness with an upper limit of 400 mg/L calcium carbonate (CaCO_3). Hardness of BTL effluent is most commonly greater than 400 mg/L calcium carbonate resulting in a consistent maximum standard from sample to sample.

4.0 SYSTEM PERFORMANCE SUMMARY

No exceedances of DEQ-7 standards were observed for aluminum, arsenic, cadmium, copper, iron, lead, mercury, silver, or zinc during this reporting period. Water quality graphics for the major constituents of concern (COCs) (aluminum, arsenic, cadmium, copper, iron, lead, mercury, silver, and zinc) are provided in Appendix A.2.

Exceedance information and COC statistics are shown in the Discharge Monitoring Report (DMR) Form provided in Appendix A.1. The maximum target for effluent pH, 9.50 standard units (SU), was not exceeded during this reporting period.

Complete BTL information for this reporting period is included with this report in separate electronic files, including an O&M events log and Field Data Summary file. The electronic file also includes graphical representations of the data. Analytical laboratory reports are also included with this report as separate electronic files for reference (as appropriate).

5.0 OPERATIONS SUMMARY

The BTL has been running under routine operations as described in the OM&M Plan. Further details of treatment operations and site events for this reporting period are described in the following sections.

5.1 Influent Conditions

Influent flow measured at SS-2 is summarized below. Appendix B contains a graphical representation of the influent flow data.

Influent Flow

Total Flow	170.1	million gallons
Average Flow Rate	1,296	gallons per minute

5.2 BPSOU Subdrain Pump Station Conditions

Flow pumped from the Pump Station and Wet Vault water levels are summarized below. Appendix B contains a graphical representation of the flow data.

Pump System Flow

Total Flow	55.9	million gallons
Average Flow Rate	422	gallons per minute

Wet Vault Levels

Minimum	5,433.10	feet above mean sea level-National Geodetic Vertical Datum 29 (amsl-NGVD29)
Maximum	5,436.45	feet amsl-NGVD29
Average	5,435.82	feet amsl-NGVD29

5.3 West Camp Pump Station Conditions

The WCP-1 flow and water levels are summarized below. Appendix B contains graphical representation of the recorded data.

West Camp Pump System Flow

Total Flow	27.3	million gallons
Average Flow Rate	206	gallons per minute

West Camp Water Levels

Minimum	5,421.19	feet amsl-NGVD29
Maximum	5,421.75	feet amsl-NGVD29
Average	5,421.62	feet amsl-NGVD29

5.4 Missoula Gulch Baseflow and Hydraulic Control Channel Flow

Missoula Gulch baseflow and groundwater collected by the HCC surrounding Lower Area One (LAO) make up the remaining influent flow. The base flow (discharging groundwater) from the upper portion of the Missoula Gulch drainage typically ranges from 50 to 100 gallons per minute and eventually discharges to the HCC. The HCC flow is comprised of influent sources, previously described, recaptured flow from the lagoon system, and captured untreated groundwater along the boundary of LAO. No flow measurement devices are in place to quantify the flow of groundwater from these sources.

5.5 Lime Addition

Daily lime usage, calculated on total lime dispensed via the gravimetric system, and dosage set point are listed below. Lime addition ceased for brief periods to accommodate general maintenance, and these periods were recorded in system notes.

Lime Set Point

Minimum	125	mg/L
Maximum	130	mg/L
Most Common	125	mg/L

Daily Lime Dosage (calculated)

Minimum	118	mg/L
Maximum	132	mg/L
Average	127	mg/L
Total Lime Usage	90	Tons

Post-treatment pH (minimum, maximum, and average) measured at station INDC, is listed below. Appendix B includes daily lime addition and influent flow data and resulting pH values through the treatment process.

Post-treatment pH at INDC

Minimum	9.87	SU
Maximum	10.57	SU
Average	10.11	SU

5.6 Effluent Conditions

Effluent flow measured near SS-1 and the quarterly *effluent deficit* to influent flow are listed below. Appendix B provides graphical and tabulated data of influent and effluent flows.

Effluent Flow

Total Flow	132.4 million gallons
Average Flow Rate	998 gallons per minute

Influent – Effluent Deficit

System Loss/Recirculation	37.7 million gallons
Average system loss flow rate	285 gallons per minute

5.7 Effluent pH

Effluent pH (minimum, maximum, and average) measured at station SS-1 is listed below. The maximum target for pH, 9.50 SU, was not exceeded during this reporting period.

pH @ SS-1

Minimum	9.11 SU
Maximum	9.48 SU
Average	9.28 SU
Exceedances above pH greater than 9.5	0

5.8 Inspection and Maintenance

Site operators completed routine maintenance and quarterly overview inspection tasks as listed in the Routine OM&M Plan (Atlantic Richfield, 2016). Appendix C contains a summary of the operator O&M events log. During the third quarter of 2020, the following tasks were completed:

- Monthly downloading and semi-annual maintenance of the subdrain area-velocity (AV) flow meters located in the subdrain.
- Replaced the south dry vault pump and cleaned the associated piping located at the BPSOU vault.
- Big Sky Reclamation (BSR) completed weed spraying activities within BTL/LAO.
- Jordan Contracting Inc. (JCI) installed additional discharge piping extending from BRW-00 discharge to the north drying bed. Construction was completed per *Butte Priority Soils Operable Unit (BPSOU) Subdrain Iron Precipitation Capture Work Plan BTL-OMM RFI-01 2020* (dated March 26, 2020) in mid-July 2020.

- JCI replaced the flowmeter (FIT-BRW-6025) and installed a maintenance manhole for the south discharge line in BRW. JCI completed the construction of the dredge access ramp in cell D4 per the BTL at LAO Cell D4 Dredge Access Ramp Design Report/Work Plan (Atlantic Richfield, 2020) in September 2020.
- The fall dredging/sludge removal in lagoon cells A1, B1, and C1 began on September 11, 2020, and will be completed in early October.

6.0 TRAINING

Site operators continued to review standard operating procedures relevant to work assignments, and also received training on seasonal tasks. Appendix C contains a training log for the quarter.

7.0 CONCLUSION

No exceedances of DEQ-7 water quality standards for arsenic, cadmium, copper, iron, lead, mercury, silver, or zinc were observed in the BTL effluent samples, and the maximum effluent pH, 9.5 SU, was not exceeded. The BTL system performed effectively through the reporting period and operators continued to optimize treatment. Appendix A.2 contains a summary of analytical results at the effluent discharge point SS-1.

8.0 REFERENCES

- Atlantic Richfield Company, 2020. Butte Treatment Lagoons (BTL) at Lower Area One (LAO) Cell D4 Dredge Access Ramp Design Report/Work Plan (DR/WP). Prepared by Pioneer Technical Services for Atlantic Richfield Company. September 1, 2020.
- Atlantic Richfield Company, 2016. Draft Final Butte Treatment Lagoons Groundwater Treatment System Routine Operations, Maintenance, and Monitoring (OM&M) Plan. May 27, 2016.
- DEQ, 2006. Circular DEQ-7 Montana Numeric Water Quality Standards. Montana Department of Environmental Quality, February 2006.
- EPA, 2006. U.S. EPA Record of Decision BPSOU Silver Bow Creek/Butte NPL Site. Environmental Protection Agency, September 2006.

Figures

Figure 1. BTL and BPSOU Subdrain Routine Sample and Monitoring Locations



Point Table			Point Table		
Description	Northing	Easting	Description	Northing	Easting
MH-MSD106	651209.02	1197905.47	HCC-01	651325.00	1193749.26
MH-MSD108	651265.29	1198781.03	HCC-01A	651326.53	1193021.75
MH-MSD110	651503.81	1199850.85	HCC-01B	651331.65	1192933.79
MH-MSD113	652414.06	1200906.31	HCC-02A	651364.64	1192780.84
MH-MSD116	653236.82	1201858.01	HCC-03	651895.05	1192245.96
MSD-HCC	651600.21	1194949.19	HCC-03A	651940.66	1192156.74
MSD-OUT	651324.20	1197083.50	HCC-04	652072.94	1191792.43
A1	651838.45	1192164.94	HCC-04A	652097.11	1191743.43
A2	651931.22	1191690.21	HCC-05	652280.66	1191254.87
A3	652055.47	1191180.80	HCC-05A	652303.23	1191210.43
B1	651484.14	1192551.84	HCC-06	652343.18	1191051.80
B2	651657.02	1192233.20	HCC-06A	652355.78	1191012.56
B3	651702.08	1192096.79	HCC-07	652188.07	1190724.00
C1	651464.96	1192558.36	INDC	651511.64	1192604.67
C3	651541.57	1192046.18	INF04	651457.40	1192637.70
			EFS-07	651925.98	1191093.47

- LEGEND:
- BTL ANALYTICAL SAMPLE COLLECTION
 - SUBDRAIN LOADING - FLOW WATER LEVEL, FIELD PARAMETERS. ANALYTICAL SAMPLES
 - BTL FIELD DATA - LEVEL
 - HCC STAFF GAUGE LOCATIONS
 - BTL FIELD DATA- pH, TEMP, CONDUCTIVITY
 - INDC

DISPLAYED AS:

COORD SYS/ZONE: MSP

DATUM: NAD 83

UNITS: FEET

SOURCE: PIONEER

SCALE IN FEET

0 100 200

FIGURE 1

1101 SOUTH MONTANA
BUTTE, MONTANA 59701
(406) 782-5177

BTL AND BPSOU
SUBDRAIN ROUTINE
SAMPLE AND
MONITORING
LOCATIONS

DATE: 2/2019

Appendix A

Results and Reports

Appendix A.1

Discharge Monitoring Reports

SUMMARY OF ANALYTICAL RESULTS FOR EFS-07. Third Quarter 2020				
COC	LOW	AVG	HIGH	EXCURSIONS
ARSENIC (mg/l)	0.0042	0.0049	0.0059	0 out of 26
CADMIUM (mg/l)	0.00010	0.00016	0.00025	0 out of 26
COPPER (mg/l)	0.0091	0.0117	0.0160	0 out of 26
IRON (mg/l)	0.012	0.020	0.035	0 out of 26
LEAD (mg/l)	0.00014	0.00024	0.00051	0 out of 26
MERCURY (mg/l)	0.000005	0.000005	0.000008	0 out of 26
SILVER (mg/l)	0.000077	0.000082	0.000140	0 out of 26
ALUMINUM (mg/l)	0.0071	0.0104	0.0290	0 out of 26
ZINC (mg/l)	0.032	0.046	0.069	0 out of 26
pH (SU)	9.11	9.28	9.48	0 out of 92
HARDNESS (mg/l)	341	382	400	n/a

Reported total recoverable values for aluminum are compared to the chronic dissolved standard of 0.087 mg/L. Mercury Reporting limit is 0.00005 mg/L, the detection limit is 0.0000039 mg/L.

DISCHARGE MONITORING REPORT FORM

Name:	Atlantic Richfield Company				Discharge Number			
Address:	317 Anaconda Road				EFS-07			
	Butte, MT 59701				Comparison to ROD Standards			
Facility:	Butte Treatment Lagoons							
Location:	Butte, Montana							

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
2020	7	1	to	2020	9	30

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSES	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
ARSENIC (Total)	SAMPLE MEASUREMENT	NA	NA	NA	0.0042	0.0049	0.0059	mg/l	0/26	2/7	COMP
	DISCHARGE				0.010		0.010				
	STANDARD	NA	NA		Daily Min		Daily Max			Twice/Week	ISCO
CADMIUM *	SAMPLE MEASUREMENT	NA	NA	NA	0.00010	0.00016	0.00025	mg/l	0/26	2/7	COMP
	DISCHARGE *				0.00067		0.00076				
	STANDARD	NA	NA	NA	Daily Min		Daily Max			Twice/Week	ISCO
COPPER *	SAMPLE MEASUREMENT	NA	NA	NA	0.0091	0.0117	0.0160	mg/l	0/26	2/7	COMP
	DISCHARGE				0.0266		0.0305				
	STANDARD	NA	NA	NA	Daily Min		Daily Max			Twice/Week	ISCO
IRON	SAMPLE MEASUREMENT	NA	NA	NA	0.012	0.020	0.035	mg/l	0/26	2/7	COMP
	DISCHARGE				1.0		1.0				
	STANDARD	NA	NA	NA	Daily Min		Daily Max			Twice/Week	ISCO
LEAD *	SAMPLE MEASUREMENT	NA	NA	NA	0.00014	0.00024	0.00051	mg/l	0/26	2/7	COMP
	DISCHARGE *				0.015	0.015	0.015				
	STANDARD	NA	NA	NA	Daily Min	HH	Daily Max			Twice/Week	ISCO
MERCURY	SAMPLE MEASUREMENT	NA	NA	NA	0.000005	0.000005	0.000008	mg/l	0/26	2/7	COMP
	DISCHARGE					0.00005					
	STANDARD	NA	NA	NA	Daily Min	HH	Daily Max			Twice/Week	ISCO
SILVER*	SAMPLE MEASUREMENT	NA	NA	NA	0.000077	0.000082	0.000140	mg/l	0/26	2/7	COMP
	DISCHARGE				0.033		0.044				
	STANDARD	NA	NA	NA	Daily Min		Daily Max			Twice/week	ISCO
COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)											
* Values are hardness corrected.											
Reported total recoverable values for aluminum are compared to the chronic dissolved standard of 0.087 mg/L.											
Mercury Reporting limit is 0.00005 mg/L, the detection limit was 0.0000039 and 0.0000045 mg/L.											

DISCHARGE MONITORING REPORT FORM

Name:	Atlantic Richfield Company			Discharge Number	
Address:	317 Anaconda Road			EFS-07	
	Butte, MT 59701			Comparison to ROD Standards	
Facility:	Butte Treatment Lagoons				
Location:	Butte, Montana				

MONITORING PERIOD							
YEAR	MO	DAY		YEAR	MO	DAY	
2020	7	1	to	2020	9	30	

from

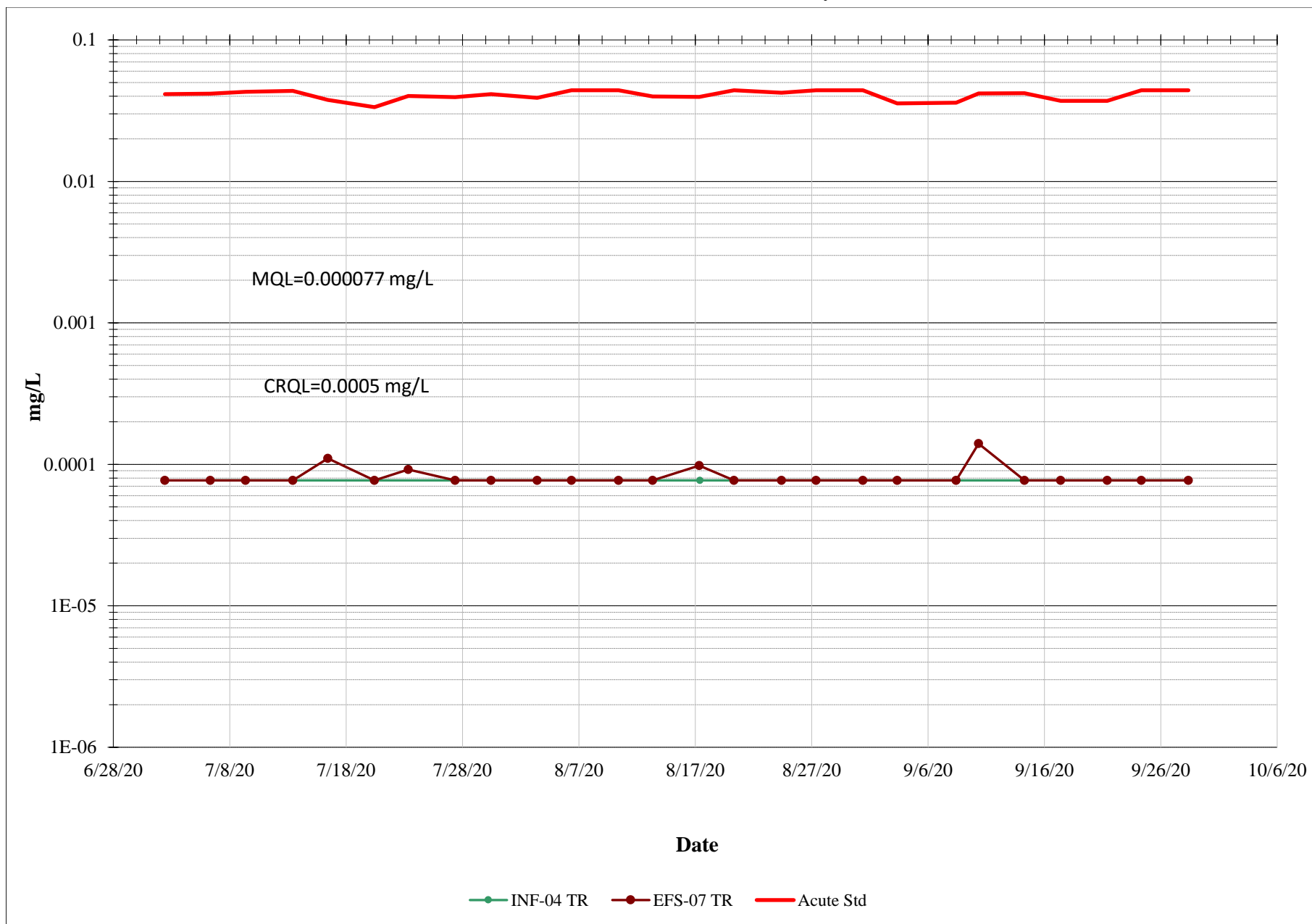
PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO.	FREQUENCY	SAMPLE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS	EX	OF ANALYSES	TYPE
ALUMINUM	SAMPLE MEASUREMENT	NA	NA	NA	0.0071	0.0104	0.0290	mg/l	0/26	2/7	COMP
	DISCHARGE STANDARD	NA	NA		0.087 Daily Min		0.087 Daily Max			Twice/Week	ISCO
ZINC *	SAMPLE MEASUREMENT	NA	NA	NA	0.032	0.046	0.069	mg/l	0/26	2/7	COMP
	DISCHARGE * STANDARD	NA	NA	NA	0.339 Daily Min		0.388 Daily Max			Twice/Week	ISCO
pH	SAMPLE MEASUREMENT	NA	NA	SU	9.11	9.28	9.48	SU	0/92	7/7	INST
	DISCHARGE STANDARD	NA	NA	SU	6.5 Daily Min		9.5 Daily Max			Daily	Instan.
HARDNESS	SAMPLE MEASUREMENT	NA	NA	NA	341	382	400	mg/l	N/A	2/7	COMP
	DISCHARGE STANDARD	NA	NA	NA	Daily Min		Daily Max			Twice/Week	ISCO
COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachements here)											
* Values are hardness corrected.											
Reported total recoverable values for aluminum are compared to the chronic dissolved standard of 0.087 mg/L.											
Mercury Reporting limit is 0.00005 mg/L, the detection limit was 0.0000039 and 0.0000045 mg/L.											

Appendix A.2

Analytical Laboratory Results

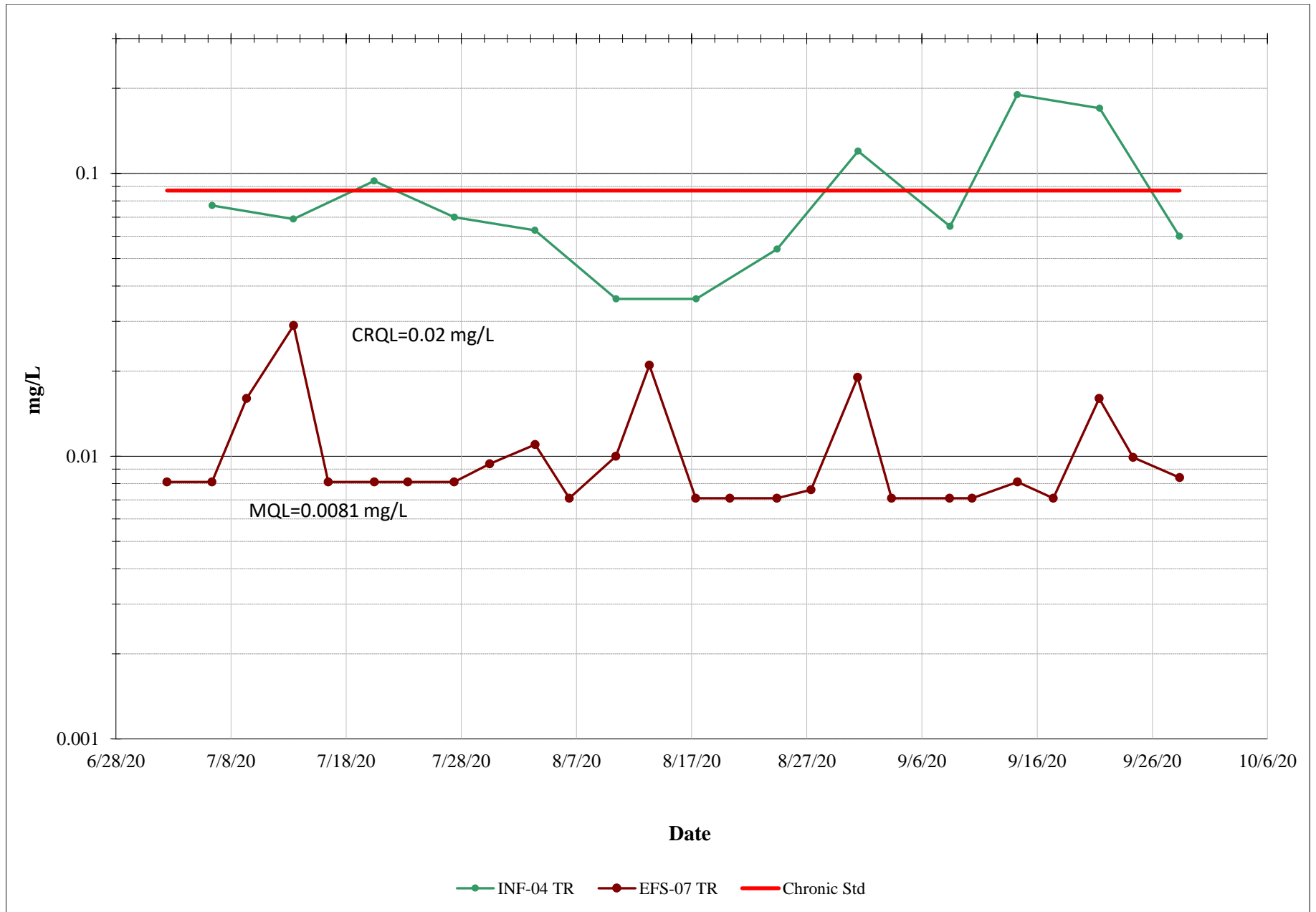
(Analytical results are provided electronically in the BTLChemicalDump Excel file included with this report)

Butte Treatment Lagoon System Silver Concentration- Preliminary



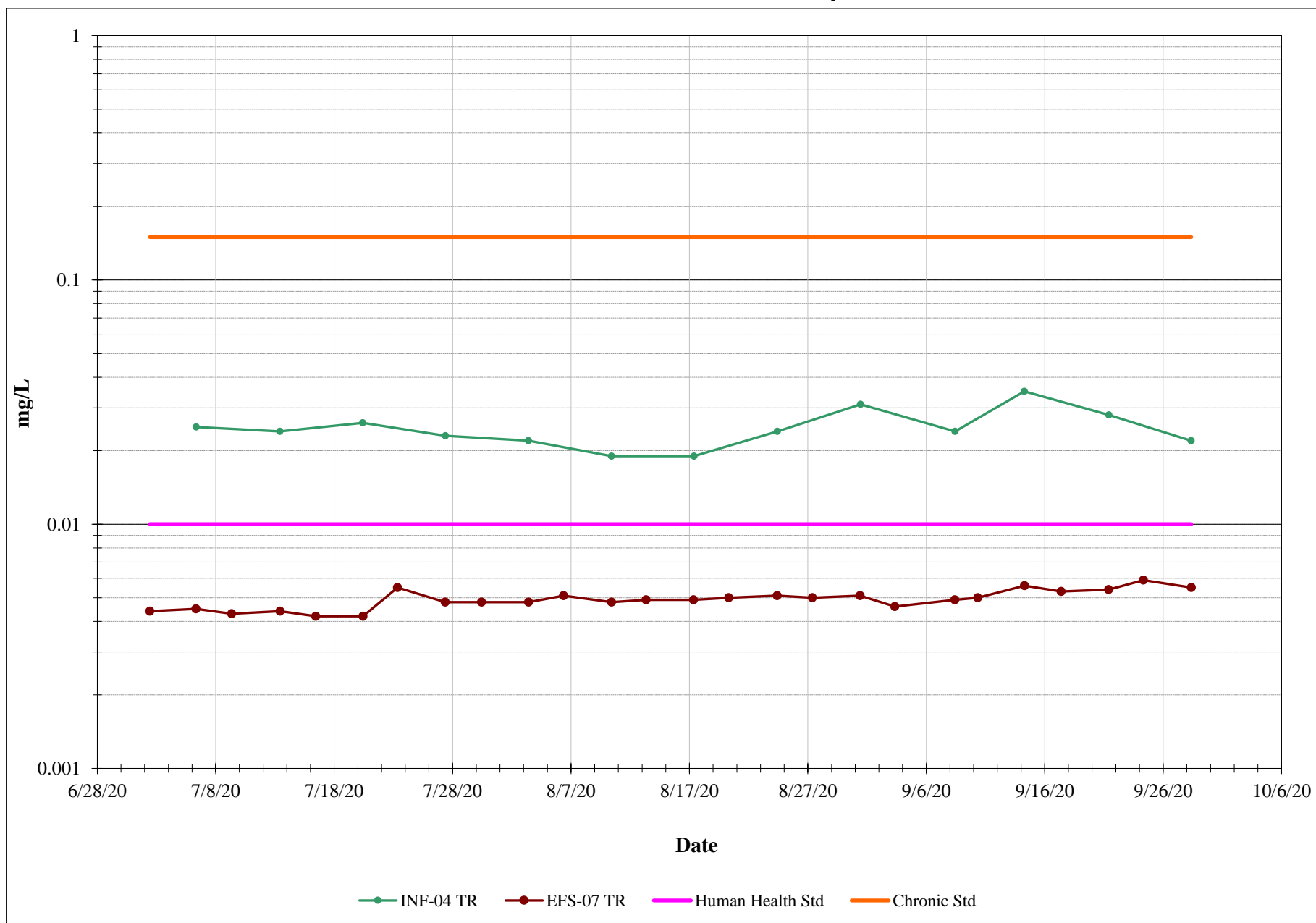
Silver maximum standard is DEQ-7 Acute Aquatic standard calculated based on effluent (EFS-07) hardness.

Butte Treatment Lagoon System
Aluminum Concentration- Preliminary



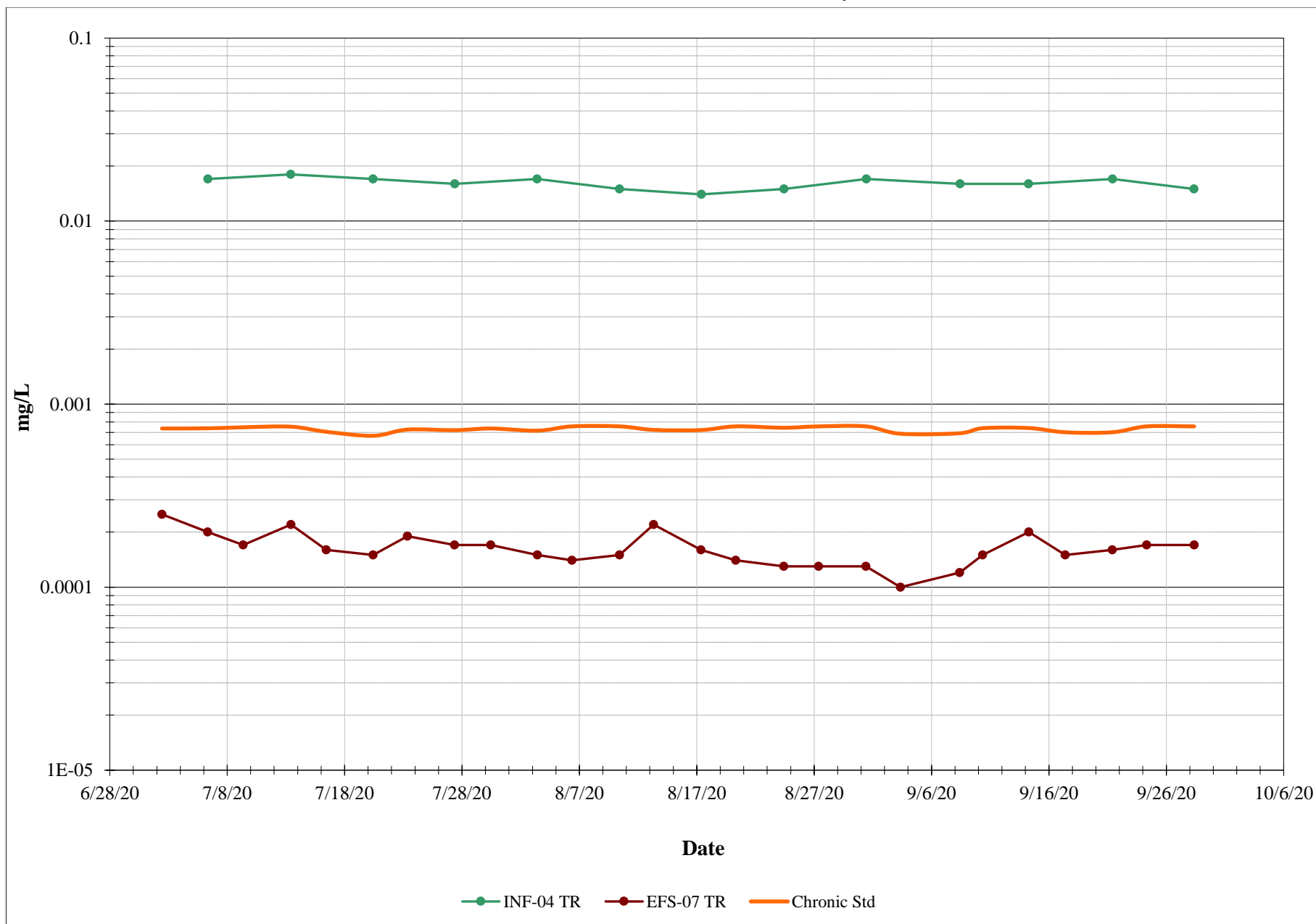
Aluminum maximum standard is DEQ-7 Chronic Aquatic standard.

Butte Treatment Lagoon System Arsenic Concentration- Preliminary



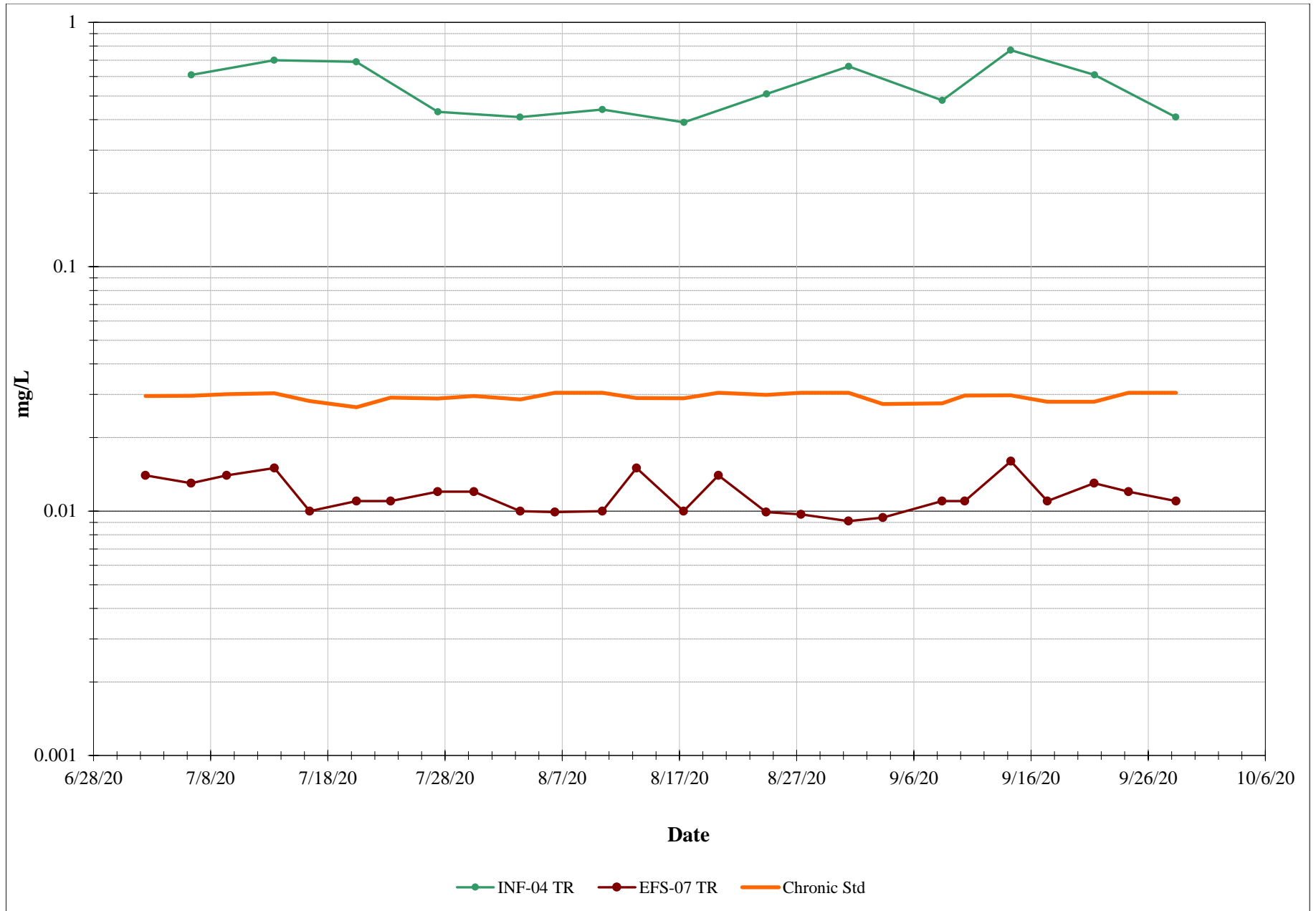
Arsenic maximum standard is DEQ-7 Human Health standard.

Butte Treatment Lagoon System Cadmium Concentration- Preliminary



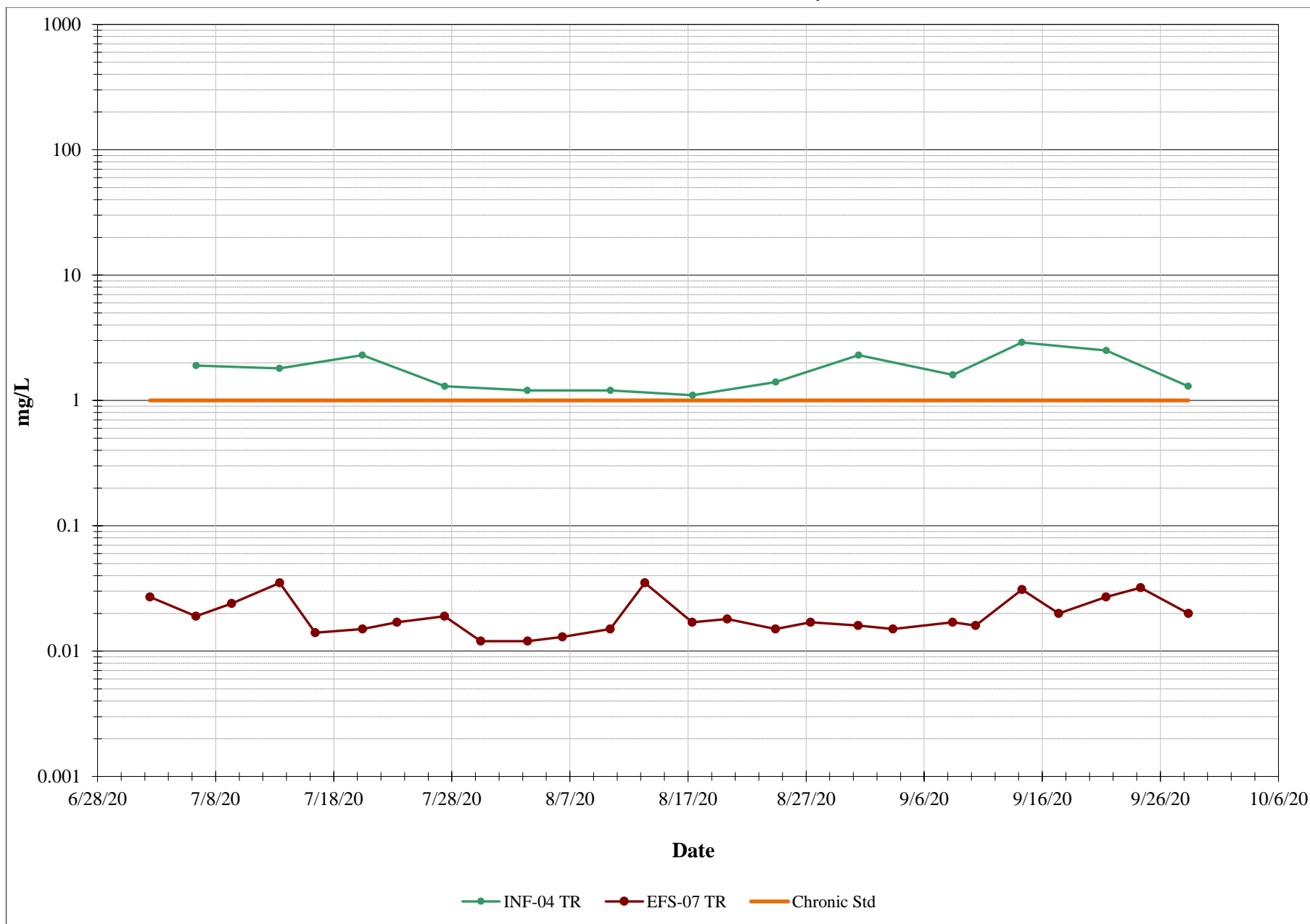
Cadmium maximum standard is DEQ-7 Chronic Aquatic standard calculated based on effluent (EFS-07) hardness.

Butte Treatment Lagoon System Copper Concentration- Preliminary



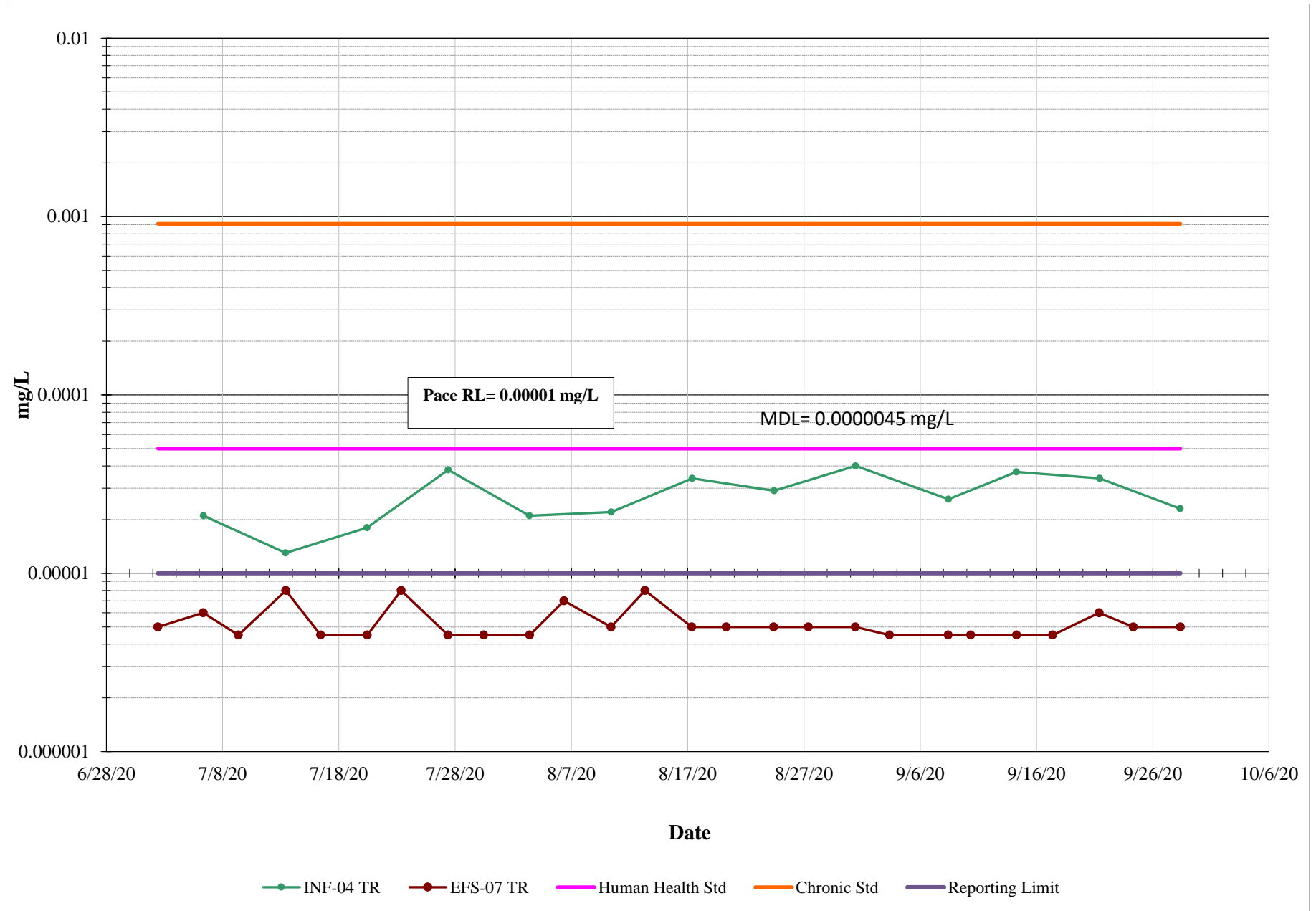
Copper maximum standard is DEQ-7 Chronic Aquatic standard calculated based on effluent (EFS-07) hardness.

Butte Treatment Lagoon System Iron Concentration- Preliminary



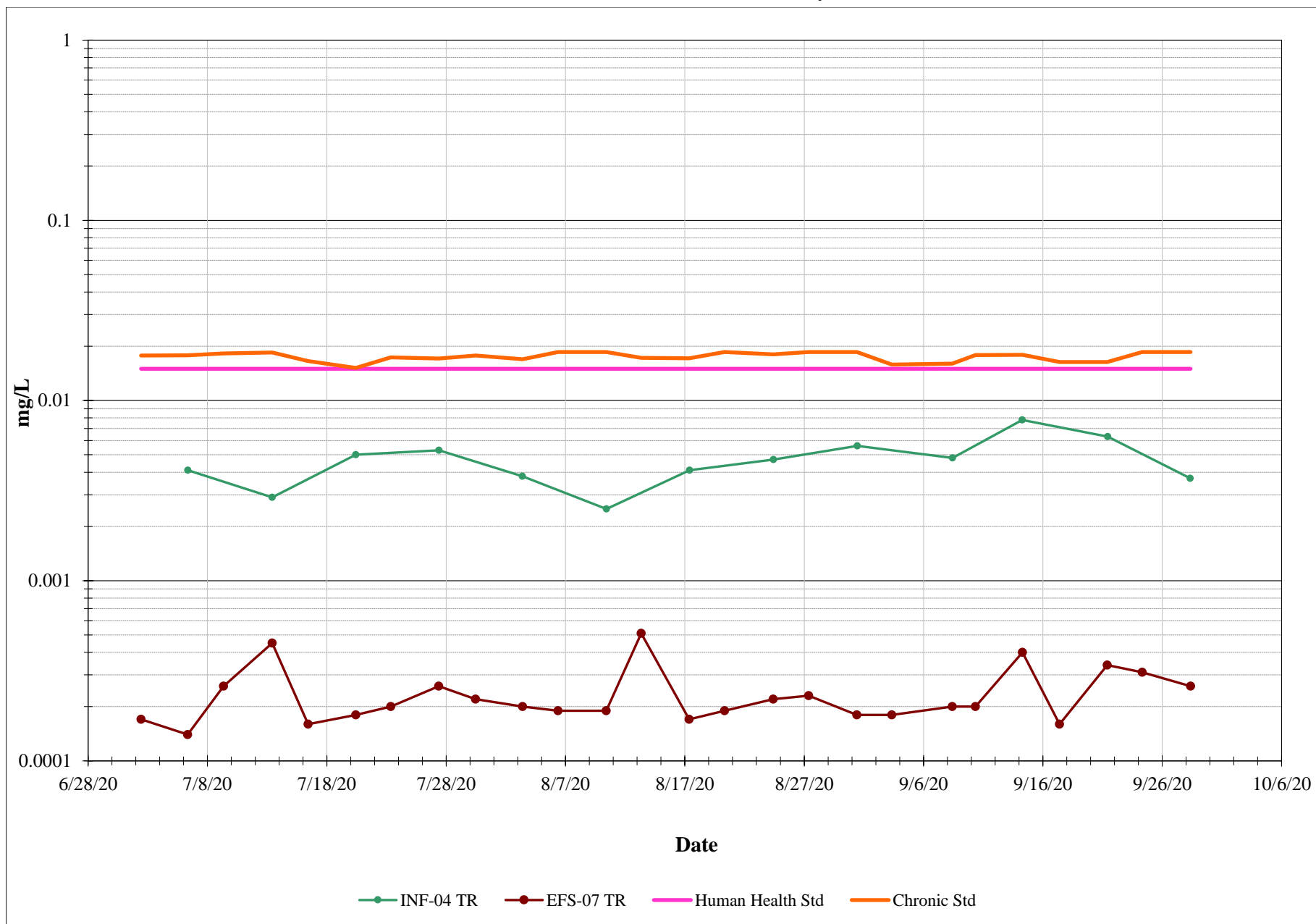
Iron maximum standard is DEQ-7 Chronic Aquatic standard, Non-priority Pollutant value, 1.0 mg/L.

Butte Treatment Lagoon System
Mercury Concentration- Preliminary



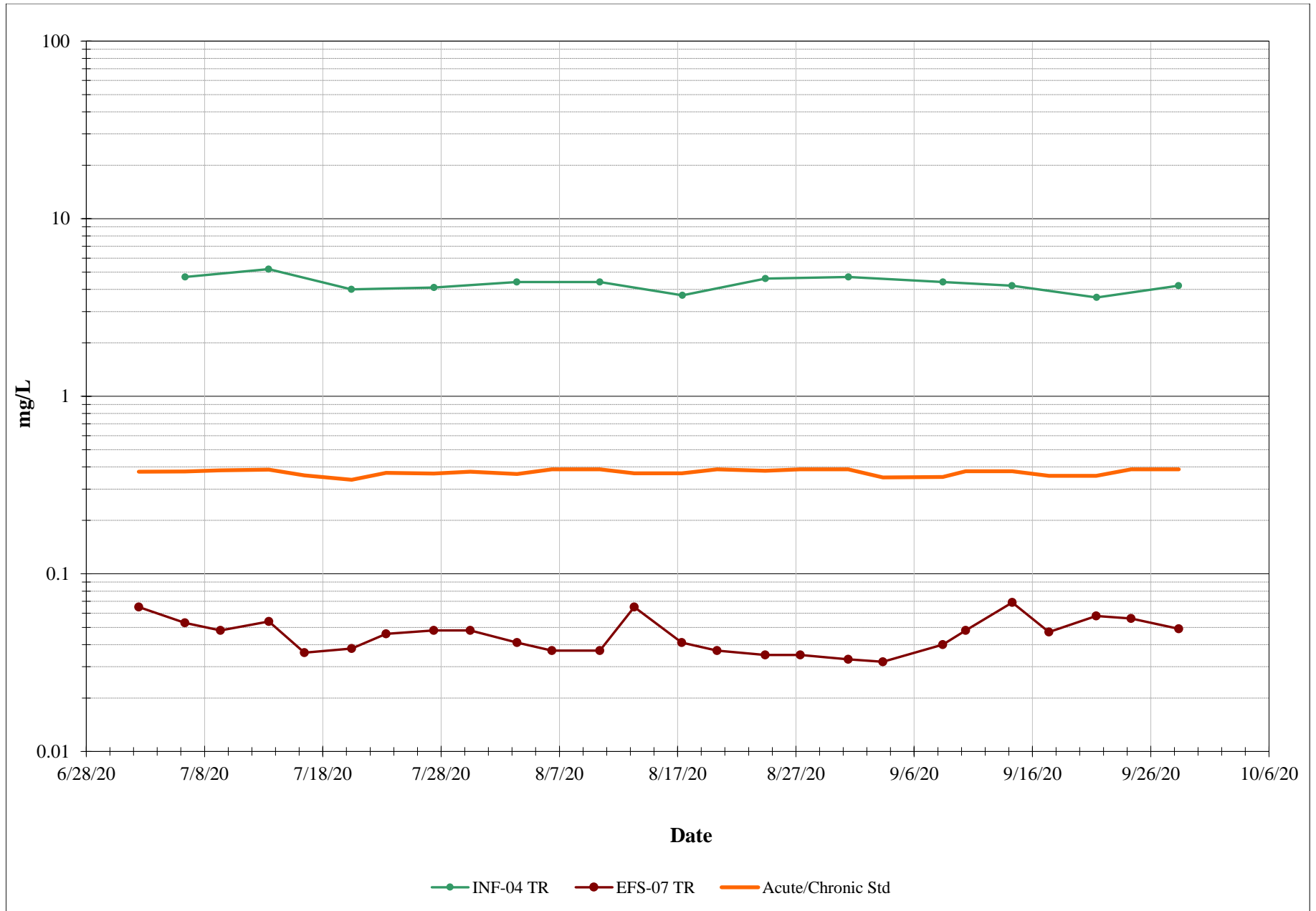
Mercury maximum standard is DEQ-7 Human Health standard.

Butte Treatment Lagoon System Lead Concentration- Preliminary



Lead maximum standard is DEQ-7 Human Health standard. Chronic Aquatic Life standard calculated based on effluent (EFS-07) hardness.

Butte Treatment Lagoon System
Zinc Concentration- Preliminary

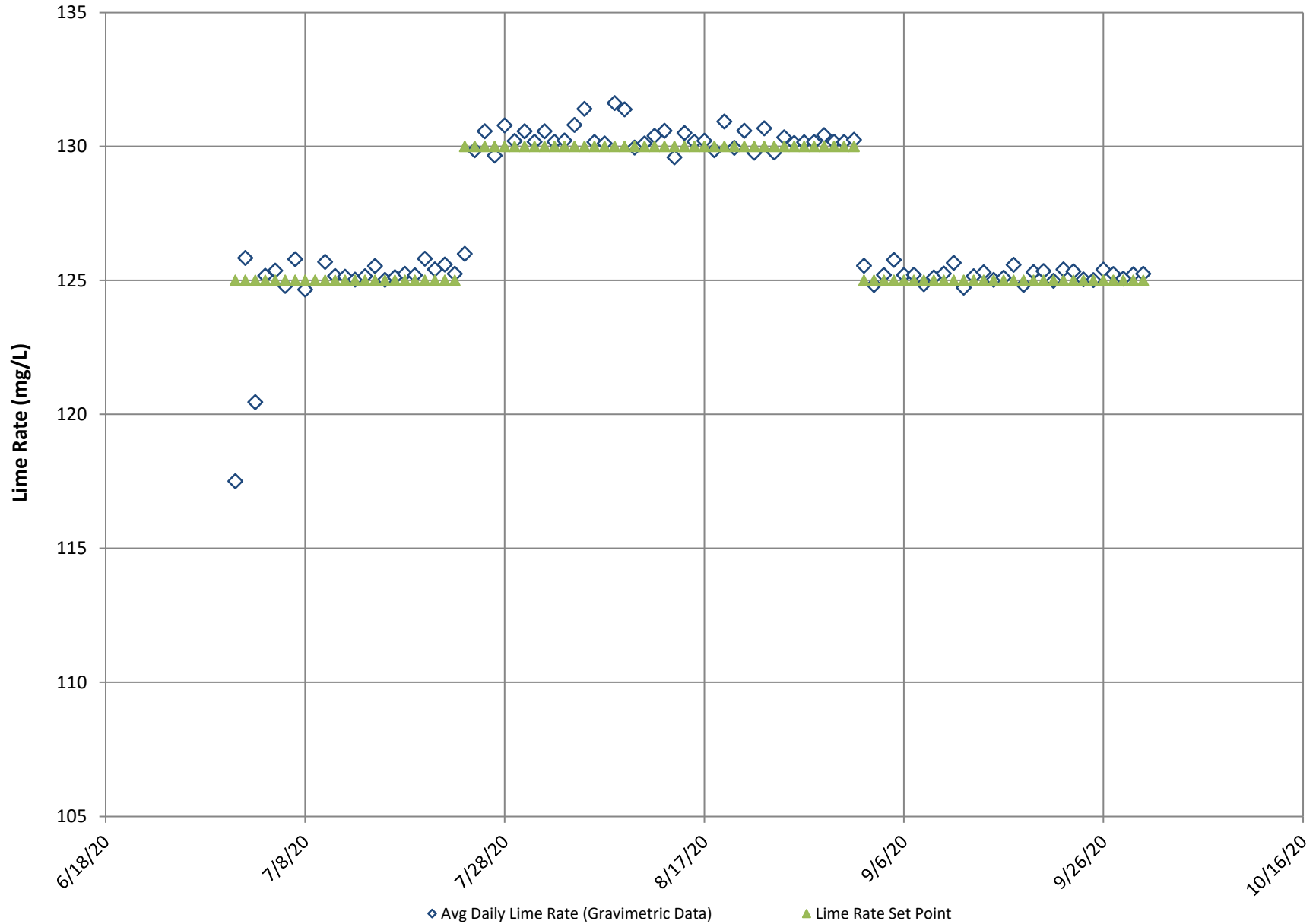


Zinc maximum standard is DEQ-7 Acute/Chronic standard calculated based on effluent (EFS-07) hardness.

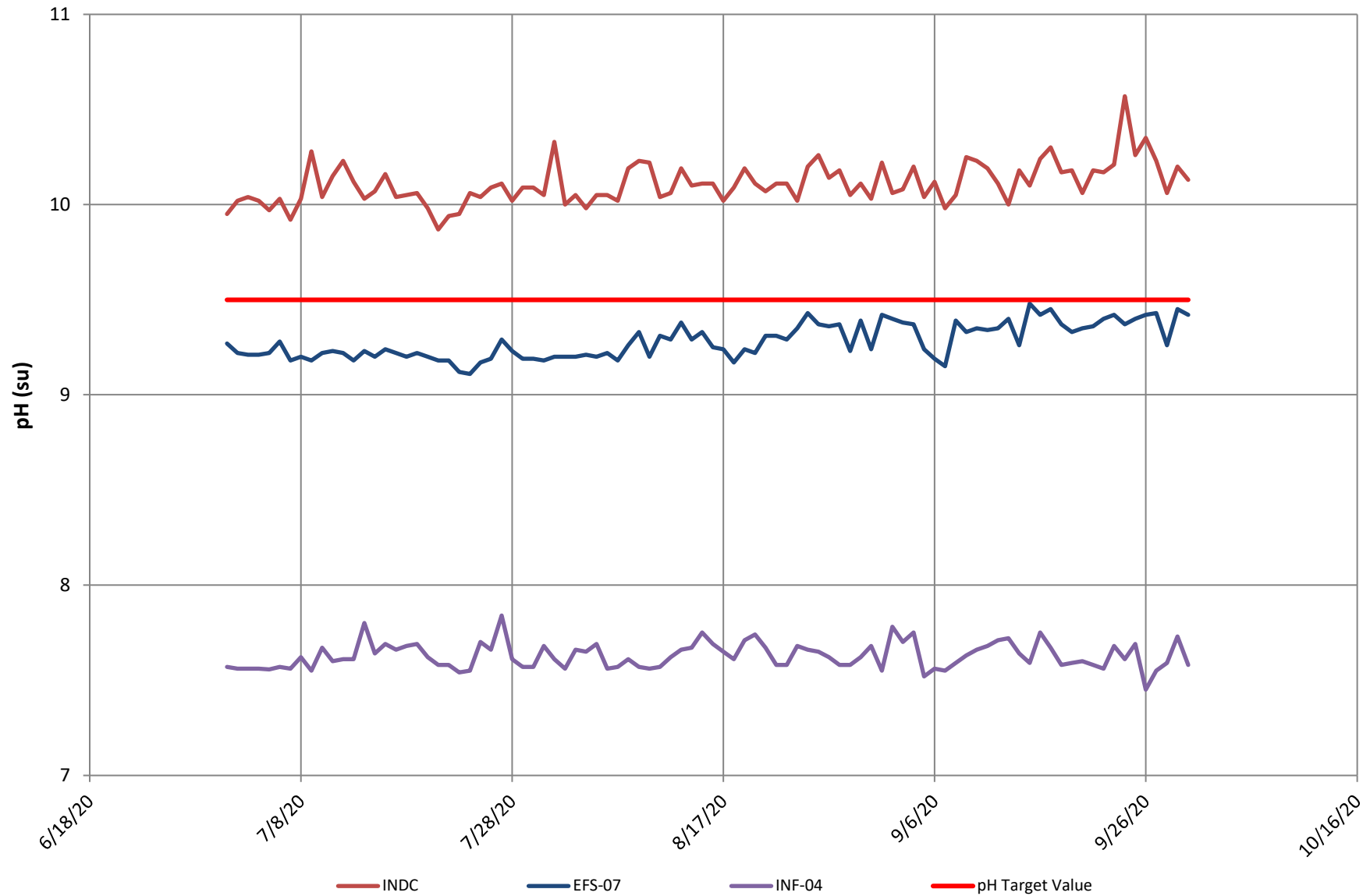
Appendix B

System Flows, Levels, and pH

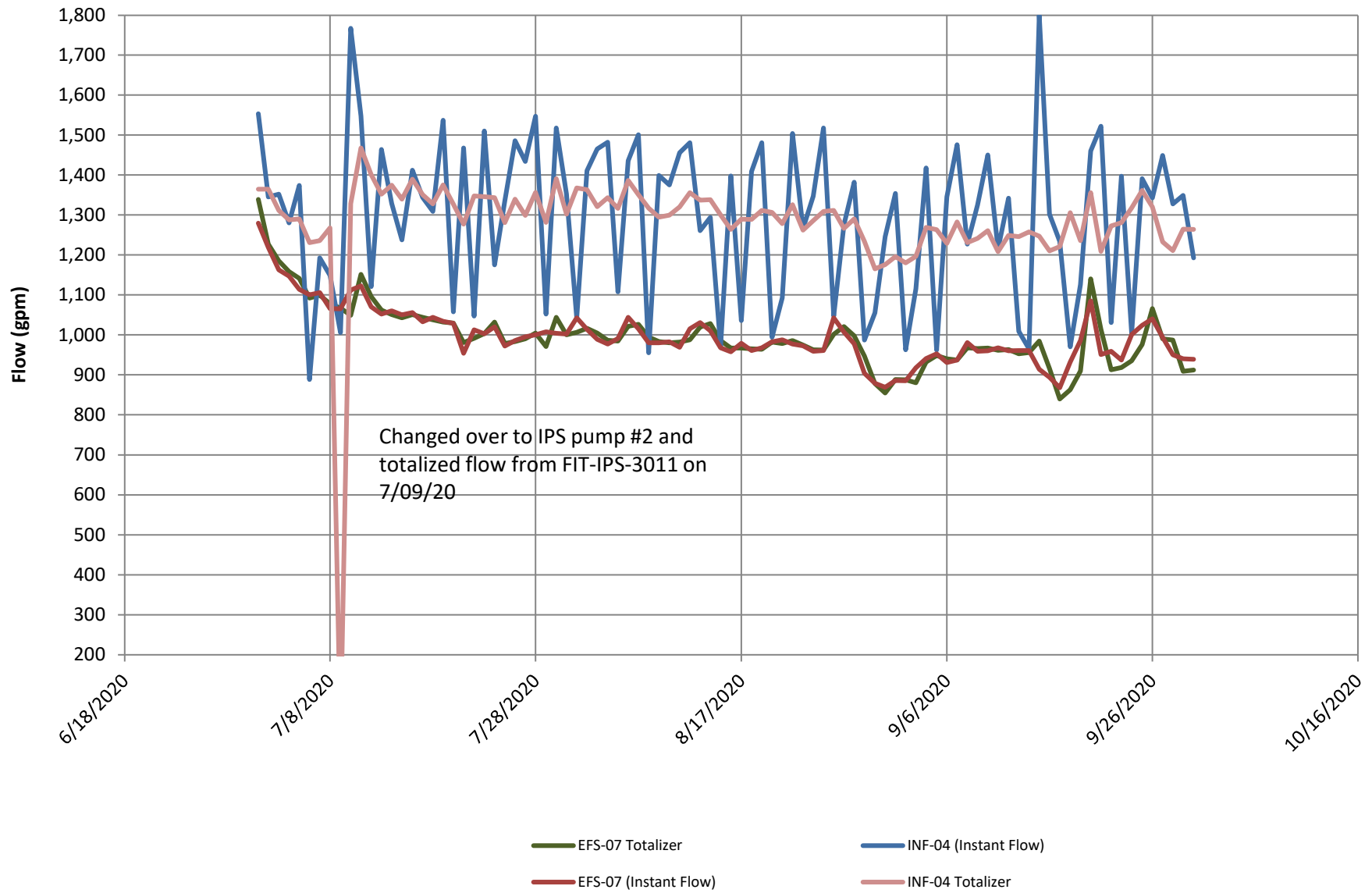
Lime Usage as Daily Dose



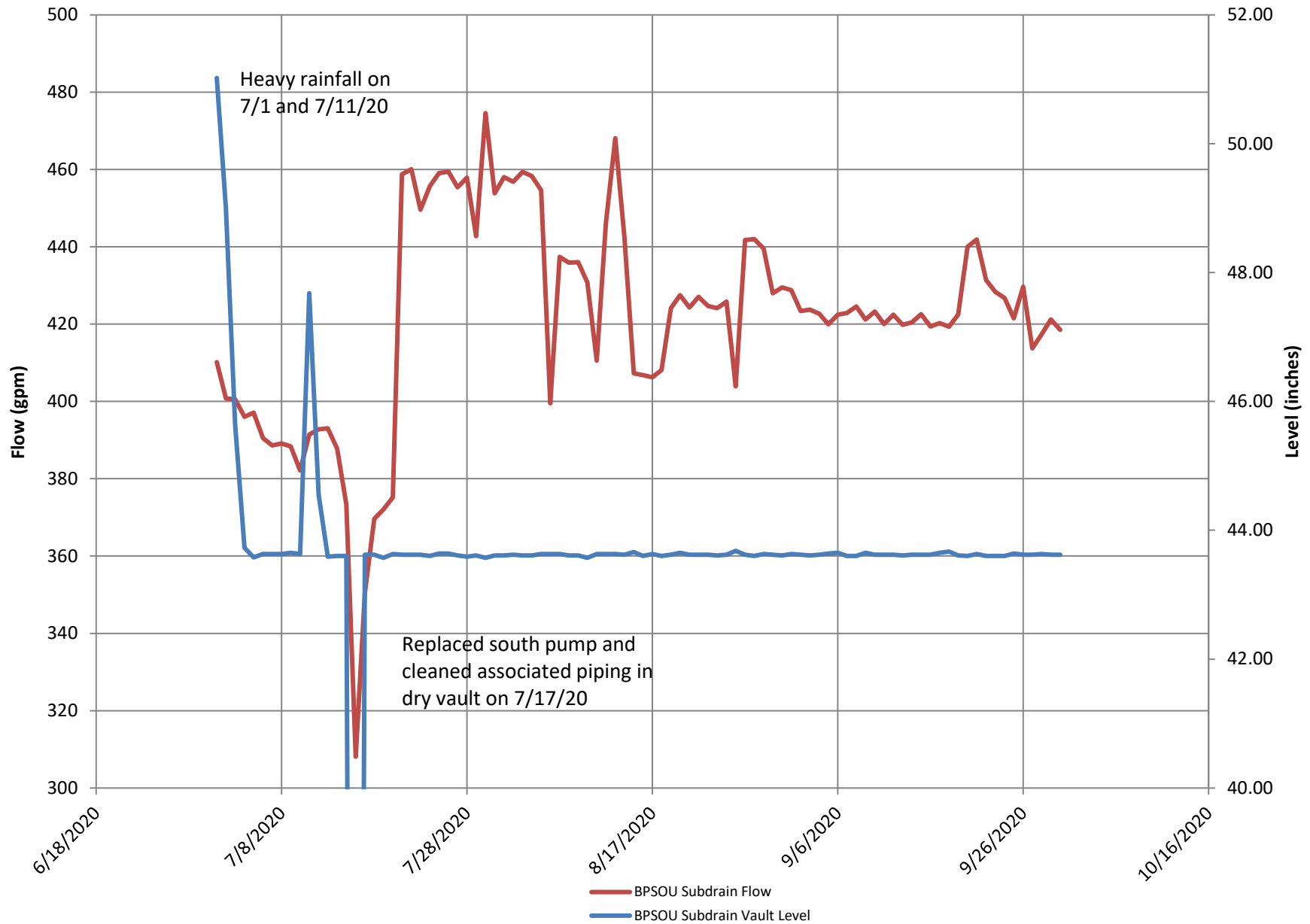
Initial Treatment (INDC), Effluent (EFS-07), Influent (INF-04) pH



BTL Influent (INF-04) and Effluent (EFS-07) Flow Rate



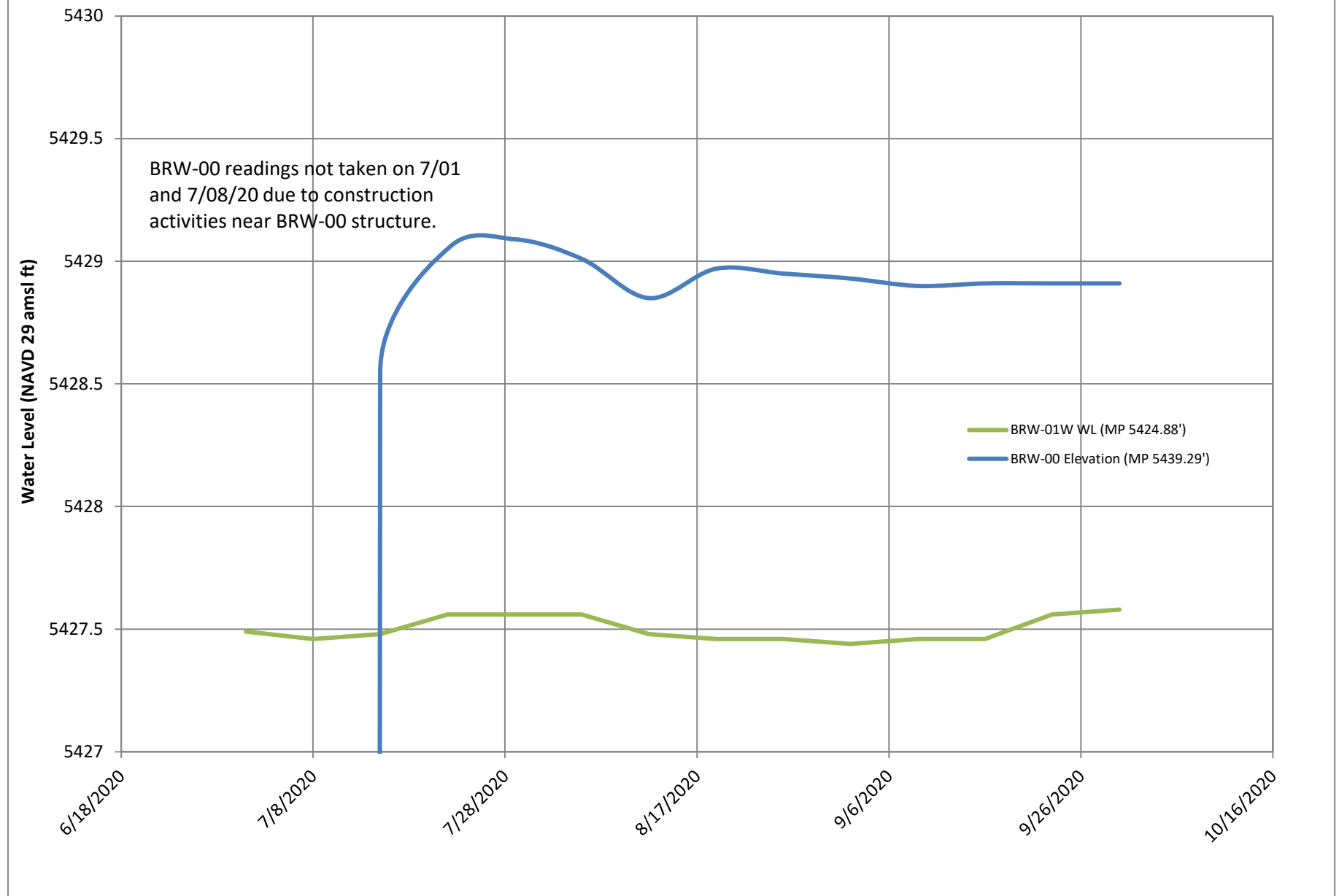
BPSOU Sub Drain Vault Level and Pumping Rate



West Camp Pump Well - Water Level and Flow



BRW-01W and BRW-00 Pond Water Level



Date	Actual Lime Rate (mg/L)	Total Lime Used - From Feeder Display (kg)	Calculated Influent Flow Rate (gpm)	Calculated Effluent Flow Rate (gpm)	Date	Actual Lime Rate (mg/L)	Total Lime Used - From Feeder Display (kg)	Calculated Influent Flow Rate (gpm)	Calculated Effluent Flow Rate (gpm)	Date	Actual Lime Rate (mg/L)	Total Lime Used - From Feeder Display (kg)	Calculated Influent Flow Rate (gpm)	Calculated Effluent Flow Rate (gpm)
7/1/2020	118	1,977,725	1,365	1,339	8/1/2020	131	2,006,254	1,368	1,006	9/1/2020	130	2,034,685	1,196	888
7/2/2020	126	1,978,635	1,365	1,227	8/2/2020	130	2,007,040	1,363	1,016	9/2/2020	126	2,035,504	1,180	888
7/3/2020	120	1,979,472	1,311	1,186	8/3/2020	130	2,008,085	1,321	1,005	9/3/2020	125	2,036,338	1,197	880
7/4/2020	125	1,980,387	1,287	1,158	8/4/2020	131	2,008,963	1,343	987	9/4/2020	125	2,037,201	1,269	932
7/5/2020	125	1,981,241	1,290	1,141	8/5/2020	131	2,009,886	1,316	985	9/5/2020	126	2,037,983	1,264	949
7/6/2020	125	1,982,087	1,231	1,092	8/6/2020	130	2,010,921	1,387	1,021	9/6/2020	125	2,038,839	1,229	940
7/7/2020	126	1,982,902	1,236	1,099	8/7/2020	130	2,011,829	1,351	1,027	9/7/2020	125	2,039,696	1,282	937
7/8/2020	125	1,983,850	1,268	1,078	8/8/2020	132	2,012,751	1,317	994	9/8/2020	125	2,040,592	1,231	968
7/9/2020	NA	1,984,684	NA	1,067	8/9/2020	131	2,013,675	1,295	983	9/9/2020	125	2,041,468	1,242	966
7/10/2020	126	1,985,591	1,329	1,049	8/10/2020	130	2,014,730	1,300	980	9/10/2020	125	2,042,269	1,261	967
7/11/2020	125	1,986,537	1,468	1,152	8/11/2020	130	2,015,585	1,320	982	9/11/2020	126	2,043,114	1,209	961
7/12/2020	125	1,987,489	1,401	1,096	8/12/2020	130	2,016,525	1,356	988	9/12/2020	125	2,044,022	1,249	963
7/13/2020	125	1,988,468	1,352	1,062	8/13/2020	131	2,017,470	1,337	1,020	9/13/2020	125	2,044,978	1,246	953
7/14/2020	125	1,989,614	1,375	1,051	8/14/2020	130	2,018,468	1,339	1,029	9/14/2020	125	2,045,640	1,258	956
7/15/2020	126	1,990,365	1,339	1,043	8/15/2020	131	2,019,348	1,300	986	9/15/2020	125	2,046,552	1,247	985
7/16/2020	125	1,991,302	1,390	1,051	8/16/2020	130	2,020,276	1,264	967	9/16/2020	125	2,047,360	1,210	916
7/17/2020	125	1,992,169	1,351	1,044	8/17/2020	130	2,021,239	1,290	967	9/17/2020	126	2,048,184	1,221	840
7/18/2020	125	1,993,110	1,328	1,038	8/18/2020	130	2,022,123	1,289	965	9/18/2020	125	2,049,088	1,306	863
7/19/2020	125	1,994,117	1,375	1,032	8/19/2020	131	2,023,049	1,311	964	9/19/2020	125	2,049,903	1,236	909
7/20/2020	126	1,994,929	1,327	1,030	8/20/2020	130	2,023,955	1,306	982	9/20/2020	125	2,050,887	1,356	1,140
7/21/2020	125	1,995,823	1,277	981	8/21/2020	131	2,024,827	1,278	979	9/21/2020	125	2,051,702	1,209	1,014
7/22/2020	126	1,996,797	1,348	991	8/22/2020	130	2,025,843	1,326	986	9/22/2020	125	2,052,554	1,273	913
7/23/2020	125	1,997,751	1,346	1,004	8/23/2020	131	2,026,745	1,262	974	9/23/2020	125	2,053,420	1,281	919
7/24/2020	126	1,998,587	1,343	1,032	8/24/2020	130	2,027,604	1,286	962	9/24/2020	125	2,054,318	1,318	935
7/25/2020	130	1,999,547	1,281	979	8/25/2020	130	2,028,566	1,309	962	9/25/2020	125	2,055,294	1,361	976
7/26/2020	131	2,000,444	1,340	983	8/26/2020	130	2,029,480	1,311	1,001	9/26/2020	125	2,056,281	1,320	1,066
7/27/2020	130	2,001,400	1,299	990	8/27/2020	130	2,030,419	1,266	1,021	9/27/2020	125	2,056,991	1,233	990
7/28/2020	131	2,002,313	1,356	1,005	8/28/2020	130	2,031,325	1,290	998	9/28/2020	125	2,057,894	1,211	987
7/29/2020	130	2,003,235	1,281	971	8/29/2020	130	2,032,184	1,234	947	9/29/2020	125	2,058,874	1,265	909
7/30/2020	131	2,004,225	1,391	1,044	8/30/2020	130	2,032,942	1,165	879	9/30/2020	125	2,059,575	1,264	912
7/31/2020	130	2,005,149	1,302	1,000	8/31/2020	130	2,033,898	1,176	855					

Weekly Influent - Effluent Summary; Q3 2020

Date	Influent (Gal.)	Effluent (Gal.)	Diff Inf-Eff (Gal.)	Diff Inf-Eff (gpm)	
6/26 to 7/02/20	13,497,489	12,396,458	1,101,031	109	
7/03 to 7/09/20	12,807,324	11,262,898	1,544,426	153	
7/10 to 7/16/20	13,900,416	10,804,605	3,095,811	307	
7/17 to 7/23/20	13,467,252	10,251,513	3,215,739	319	
7/24 to 7/30/20	13,379,040	10,085,501	3,293,539	327	
7/31 to 8/06/20	13,536,954	10,109,454	3,427,500	340	
8/07 to 8/13/20	13,356,762	10,043,116	3,313,646	329	
8/14 to 8/20/20	13,103,511	9,878,176	3,225,335	320	
8/21 to 8/27/20	13,015,928	9,915,378	3,100,550	308	
8/28 to 9/03/20	12,152,290	9,121,766	3,030,524	301	
9/04 to 9/10/20	12,639,390	9,588,282	3,051,108	303	
9/11 to 9/17/20	12,440,358	9,465,980	2,974,378	295	
9/18 to 9/24/20	12,928,571	9,638,390	3,290,181	326	
9/25 to 10/01/20	12,938,317	9,831,426	3,106,891	308	
Total Quarter	183,163,602	142,392,943	40,770,659		Gallons

289	Quarterly Ave.
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Appendix C

Operation and Maintenance Event, and Training Logs

2020 BTL O&M Events Log

1-Jul-20	9:50	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
1-Jul-20	9:50	Construction around BRW-00, staff gauges not read.	Daily BRW
2-Jul-20	9:10	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
3-Jul-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
4-Jul-20	9:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
5-Jul-20	8:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
6-Jul-20	9:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
7-Jul-20	8:05	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
8-Jul-20	10:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
8-Jul-20	10:30	Construction around BRW-00, staff gauges not read.	Daily BRW
8-Jul-20	10:30	Lime feed signal changed to FIT-IPS-3011 flow meter @ 14:45	Daily Cell
9-Jul-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
10-Jul-20	8:25	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
11-Jul-20	7:05	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
12-Jul-20	7:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
13-Jul-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
14-Jul-20	13:50	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
15-Jul-20	9:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module. Replaced South Pump, Both pumps off	Daily MSD
16-Jul-20	9:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
17-Jul-20	7:50	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module. Replaced South Pump, Both pumps off	Daily MSD
18-Jul-20	8:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module.	Daily MSD
19-Jul-20	10:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module. Replaced South Pump, Both pumps off	Daily MSD

2020 BTL O&M Events Log

20-Jul-20	7:55	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using BRW-6025 flow module. 6025 flow readings low due to issues with flow module. Switched MSD discharge to BRW-00 now using 6065 flow module for flow readings.	Daily MSD
20-Jul-20	7:55	Added one 6" stop log to BRW-00 7/20/2020	Daily BRW
21-Jul-20	8:30	Operating dry vault pumps, north and south lines. 6025 flow meter is being replaced. Changed South line discharge to BRW-00.	Daily MSD
22-Jul-20	9:50	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
23-Jul-20	10:45	Operating dry vault pumps, north and south lines. 6025 flow meter is being replaced. Changed South line discharge to BRW-00.	Daily MSD
23-Jul-20	10:45	Increased lime rate to 130 mg/l @ 13:00	Daily Cell
24-Jul-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
25-Jul-20	9:55	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
26-Jul-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
27-Jul-20	9:30	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
28-Jul-20	8:10	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
29-Jul-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
30-Jul-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
31-Jul-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
1-Aug-20	11:45	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
2-Aug-20	7:15	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
3-Aug-20	10:00	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
4-Aug-20	8:00	Operating dry vault pumps, north and south lines. Changed South line discharge to BRW-00, 6025 flow module being replaced	Daily MSD
5-Aug-20	7:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
6-Aug-20	8:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
7-Aug-20	7:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
8-Aug-20	6:55	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
9-Aug-20	6:50	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
10-Aug-20	10:20	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
11-Aug-20	8:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
12-Aug-20	7:40	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
13-Aug-20	7:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
14-Aug-20	8:50	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
15-Aug-20	7:40	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
16-Aug-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
17-Aug-20	9:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD

2020 BTL O&M Events Log

18-Aug-20	9:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
19-Aug-20	8:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
20-Aug-20	8:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
21-Aug-20	7:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
22-Aug-20	9:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
23-Aug-20	9:20	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
24-Aug-20	8:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
24-Aug-20	8:00	Began using Oakton/WSP meter for daily parameters	Daily Cell
25-Aug-20	8:50	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
25-Aug-20	8:50	Power outage @ 16:30 restarted @ 17:00	Daily WCP
26-Aug-20	8:25	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
27-Aug-20	9:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
28-Aug-20	9:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
29-Aug-20	8:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
30-Aug-20	6:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
31-Aug-20	10:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
1-Sep-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
1-Sep-20	8:30	Reduced lime rate to 125 mg/L @ 10:00	Daily Cell
2-Sep-20	8:50	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
3-Sep-20	9:25	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
4-Sep-20	9:20	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
5-Sep-20	7:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
6-Sep-20	7:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
7-Sep-20	7:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
8-Sep-20	8:40	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
9-Sep-20	9:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
10-Sep-20	7:50	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
11-Sep-20	8:20	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
12-Sep-20	10:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
13-Sep-20	13:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
14-Sep-20	7:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
15-Sep-20	9:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
16-Sep-20	8:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD

2020 BTL O&M Events Log

17-Sep-20	8:25	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
18-Sep-20	8:50	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
19-Sep-20	8:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
20-Sep-20	9:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
21-Sep-20	9:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
22-Sep-20	8:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
23-Sep-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
24-Sep-20	8:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
25-Sep-20	9:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
26-Sep-20	12:00	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
27-Sep-20	8:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
28-Sep-20	10:30	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
29-Sep-20	13:45	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD
30-Sep-20	9:15	Operating dry vault pumps, north and south lines. Changed South line discharge to HCC, now using new 6025 flow module	Daily MSD

Date	Time	Operator(s)/Staff	Temp	Weather	Operations	Contractor Work	Observations/Field Issues	Inspection Follow-Ups	Visitors to Site	Safety Topics/Meetings/Pre-Entries
1-Jul-20	9:50	Taylor Stanich, Kaleb Ferriter	45 to 56F	Scattered clouds, rain	Daily site checks, Daily parameters, BRW staff gauge monitoring, Maintain freeway wetlands, HMI trouble shooting	Joe mullaney-HMI/win 911 work	After hour call out at 3:00, slurry tank 1 level high,	CO2 OFF		Muddy dike roads
2-Jul-20	9:10	Taylor Stanich	45 to 65F	Clear, sunny	Daily site checks, Daily parameters, Weekly sampling, Close out emms summary report, Clean b channel.	Dave Colbert-OPS water heater replacement	Operating dry vault pumps, north and south lines.	CO2 OFF		Biological hazards
3-Jul-20	8:30	Taylor Stanich/Kaleb Ferriter	46 to 76F	Sunny	Daily site checks, Daily parameters, Clean ops building, clean a channel,		Operating dry vault pumps, north and south lines.	CO2 OFF		Firework safety
4-Jul-20	9:30	Kaleb Ferriter	44 to 75F	Sunny	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
5-Jul-20	8:45	Kaleb Ferriter	44 to 73F	Sunny	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
6-Jul-20	9:00	Taylor Stanich	46 to 75F	Mostly sunny	Daily site checks, Daily parameters, Weekly sampling, Close out emms tasks, MSD site/generator checks		Operating dry vault pumps, north and south lines.	CO2 OFF		Weekly sampling review sds for HN03
7-Jul-20	8:05	Taylor Stanich/Kaleb Ferriter	56 to 69	Partly cloudy	Daily site checks, Daily parameters, WCP and IPS site/generator checks, assemble SBC staff gauges, clean slurry tank 1 discharge		Operating dry vault pumps, north and south lines.	CO2 OFF		Hydration
8-Jul-20	10:30	Taylor Stanich, Kaleb Ferriter	61 to 75F	Partly cloudy	Daily site checks, Daily parameters, BRW staff gauge monitoring, install SBC staff gauges, Monthly fire extinguisher inspections, Monthly operations meeting		Operating dry vault pumps, north and south lines.	CO2 OFF		Monthly fire extinguishers
9-Jul-20	8:30	Taylor Stanich/Kaleb Ferriter	46 to 76F	Sunny	Daily site checks, Daily parameters, weekly sampling, weed eating at IPS, ASB, and OPS		Operating dry vault pumps, north and south lines.	CO2 OFF		sanitation
10-Jul-20	8:25	Rob Neff	43 to 75F	Partly cloudy	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		30/30 rule for lightning
11-Jul-20	7:05	Rob Neff	50 to 84F	Sunny	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
12-Jul-20	7:00	Rob Neff	46 to 79F	Sunny	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
13-Jul-20	8:30	Taylor Stanich, Kaleb Ferriter	49 to 69F	Partly cloudy	Daily site checks, Daily parameters, Monthly compliance sampling, MSD site/generator checks, MSD subdrain downloads		Operating dry vault pumps, north and south lines.	CO2 OFF		Social distancing
14-Jul-20	13:50	Taylor Stanich	48 to 73F	clear, sunny	daily site checks, Daily parameters, WCP and ips site/generator checks, MSD subdrain sampling		Operating dry vault pumps, north and south lines.	CO2 OFF		Review SOP for MSD Subdrain sampling
15-Jul-20	9:30	Taylor Stanich	47 to 75F	clear, sunny	Daily site checks, Daily parameters, BRW staff guage monitoring, Ship MSD subdrain samples, MSD south pump replacement	BSR-weed spraying, JCI MSD south pump replacement/pip e cleanout	Operating dry vault pumps, north and south lines.	CO2 OFF		Hygiene, wash hands
16-Jul-20	9:15	Taylor Stanich	48 to 78F	clear, sunny	Daily site checks, Daily parameters, Weekly sampling, MSD south pump replacement, Clean lime silo, Weekly epa summary report	BSR-weed spraying, JCI MSD south pump replacement/pip e cleanout	Operating dry vault pumps, north and south lines.	CO2 OFF		Weed sprayers on site-communication
17-Jul-20	7:50	Taylor Stanich	52 to 82F	Clear, sunny	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
18-Jul-20	8:45	Taylor Stanich	62F	Clear, sunny	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
19-Jul-20	10:30	Taylor Stanich	57F	Clear, sunny	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication

20-Jul-20	15:25	Taylor Stanich	54 to 79F	Clear, sunny	Daily site checks, Daily parameters, MSD site/generator checks, Weekly samplig, close out weekly emms tasks	JCI MSD 6025 flow meter replacement	Operating dry vault pumps, north and south lines.	CO2 OFF		Weekly sampling review sds for HN03
21-Jul-20	8:30	Taylor Stanich/Kaleb Ferriter	49 to 87F	Clear, sunny	Daily site checks, Daily parameters, oil change for wsp truck, WCP and IPS site/generator checks, Clean lime silo, clean distrubution tank	JCI MSD 6025 flow meter replacement	Operating dry vault pumps, north and south lines.	CO2 OFF		sanitation
22-Jul-20	9:50	Taylor Stanich, Kaleb Ferriter	62 to 85F	Clear, sunny	Daily site checks, Daily parameters, BRW staff guage monitoring, site maintenance/weedeating/mowing, Install new flow sensor in MSD 116	JCI MSD 6025 flow meter replacement	Operating dry vault pumps, north and south lines.	CO2 OFF		Review tra for site weedeating/mowing
23-Jul-20	10:45	Taylor Stanich, Kaleb Ferriter	49 to 76F	Clear, sunny	Daily site checks, Daily parameters, Weekly sampling, site maintenance, CB8 maintenance, Clean CASB, Weekly EPA summary report	JCI MSD 6025 flow meter replacement	Operating dry vault pumps, north and south lines.	CO2 OFF		Warmer weather- stay hydrated
24-Jul-20	8:30	Kaleb Ferriter	46 to 78F	Mostly sunny	Daily site checks, Daily parameters, painted drying bed railing		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
25-Jul-20	9:55	Steve Lubick	48 to 75F	Partly cloudy	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
26-Jul-20	8:30	Steve Lubick	49 to 83 F	Clear calm	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
27-Jul-20	9:30	Taylor Stanich, Kaleb Ferriter	53 to 87F	Sunny	Daily site checks, Daily parameters, weekly sampling, MSD site/generator checks, Site vehicle inspections	JCI MSD 6025 flow meter replacement	Operating dry vault pumps, north and south lines.	CO2 OFF		hydration
28-Jul-20	8:10	Taylor Stanich, Kaleb Ferriter	60 to 79F	Partly cloudy	Daily site checks, Daily parameters, WCP and IPS site/generator checks, Monthly C02 inspection, truck 49 inspecton/cleaning, swept ASB, painted new bollards in drying bed		Operating dry vault pumps, north and south lines.	CO2 OFF		Eye protection
29-Jul-20	8:30	Taylor Stanich, Kaleb Ferriter	48 to 80F	Mostly Sunny	Daily site checks, Daily parameters, BRW staff gauge monitoring, cleaned C channel		Operating dry vault pumps, north and south lines.	CO2 OFF		Social distancing
30-Jul-20	8:30	Taylor Stanich, Kaleb Ferriter	53 to 87F	Sunny	Daily site checks, Daily parameters, cleaned B channel, weekly sampling, weekly epa summary report		Operating dry vault pumps, north and south lines.	CO2 OFF		hearing protection
31-Jul-20	8:30	Taylor Stanich	58 to 81F	clear, sunny	Daily site checks, Daily parameters, update LAO dialer, Clean a channel discharge		Operating dry vault pumps, north and south lines.	CO2 OFF		Biological hazards
1-Aug-20	11:45	Kaleb Ferriter	55 to 89F	partly cloudy	Daily site checks, daily parameter		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
2-Aug-20	7:15	Kaleb Ferriter	53 to 89F	sunny	Daily site checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
3-Aug-20	10:00	Taylor Stanich	59 to 82	partly cloudy	Daily site checks, daily parameters, Weekly sampling, MSD site/generator checks, Close out weekly emms tasks		Operating dry vault pumps, north and south lines.	CO2 OFF		lightning safety
4-Aug-20	8:00	Taylor Stanich	56 to 82F	Clear, sunny	Daily site checks, Daily parameters, WCP and IPS site/generator checks, monthly fire extinguisher inspections, overhead crane inspections	JCI Channel cover install	Operating dry vault pumps, north and south lines.	CO2 OFF		Monthly fire extinguishers
5-Aug-20	7:30	Taylor Stanich	52 to 78F	Partly cloudy	Daily site checks, Daily parameters, BRW staff gauge monitoring, BRW crane maintenance		Operating dry vault pumps, north and south lines.	CO2 OFF		House keeping
6-Aug-20	8:45	Taylor Stanich	48 to 80F	Partly cloudy	Daily site checks, Daily parameters, Weekly sampling, Download MSD subdrain		Operating dry vault pumps, north and south lines.	CO2 OFF		Rain showers forecasted-proper clothing

7-Aug-20	7:30	Taylor Stanich	48 to 81F	Mostly sunny	Daily site checks, Daily parameters, Install new flow module in black tail creek		Operating dry vault pumps, north and south lines.	CO2 OFF		sanitation
8-Aug-20	6:55	Rob Neff	39 to 81F	Sunny	Daily site checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
9-Aug-20	7:55	Rob Neff	40 to 81F	Sunny	Daily site checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
10-Aug-20	10:20	Taylor Stanich/Kaleb Ferriter	44 to 82F	Sunny	Daily site checks, daily parameters, assisted in pump test, weekly sampling, downloaded flow meter at koa		Operating dry vault pumps, north and south lines.	CO2 OFF		Slips, trips and falls
11-Aug-20	8:15	Taylor Stanich/Kaleb Ferriter	46 to 84	Sunny	Daily site checks, cleaned flow meters at tributary and koa, west camp and ips site/gen check		Operating dry vault pumps, north and south lines.	CO2 OFF		hand tool safety
12-Aug-20	7:40	Taylor Stanich/Kaleb Ferriter	40 to 80F	Sunny	Daily site checks, daily parameters, monthly ops meeting, sample and download subdrain		Operating dry vault pumps, north and south lines.	CO2 OFF		Sun protection
13-Aug-20	7:30	Taylor Stanich, Kaleb Ferriter	42 to 80F	Partly cloudy	Daily site checks, Daily parameters, Weekly sampling, 3Q inspections, Weekly epa summary report		Operating dry vault pumps, north and south lines.	CO2 OFF		Weekly sampling review sds for HN03
14-Aug-20	8:50	Taylor Stanich/Kaleb Ferriter	38 to 79F	Sunny	Daily site checks, Daily parameters, 3Q inspections, cleaned CASB,		Operating dry vault pumps, north and south lines.	CO2 OFF		Sun exposure
15-Aug-20	7:40	Taylor Stanich	48 to 80F	Partly cloudy	Daily site checks, Daily parameters, weekend checks		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
16-Aug-20	8:30	Taylor Stanich	48 to 81F	Mostly sunny	Daily site checks, Daily parameters, weekend checks		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
17-Aug-20	9:45	Taylor Stanich	54 to 91F	Partly cloudy	Daily site checks, Daily parameters, Monthly compliance sampling, MSD site/generator inspections, Close out weekly emms tasks		Operating dry vault pumps, north and south lines.	CO2 OFF		Monthly sampling- review sds for HNO3 and H2SO4
18-Aug-20	9:00	Taylor Stanich, Kaleb Ferriter	55 to 86F	Partly cloudy	Daily site checks, Daily parameters, waterfowl surveys, IPS and WCP site/generator checks, 3Q inspections, Download tributary flow modules	Hunter Bros-Sewage ejection pump work	Operating dry vault pumps, north and south lines.	CO2 OFF		Fire weather
19-Aug-20	8:45	Taylor Stanich	54 to 82F	Partly cloudy	Daily site checks, Daily parameters, BRW staff gauge monitoring, 3Q inspections, Maintain freeway wetlands	Hunter Bros/JCI-sewage ejection pump work	Operating dry vault pumps, north and south lines.	CO2 OFF		Possible thunder storms
20-Aug-20	8:15	Taylor Stanich	50 to 78F	Partly cloudy	Daily site checks, Daily parameters, Weekly sampling, Waterfowl survey, weekly EPA summary report		Operating dry vault pumps, north and south lines.	CO2 OFF		Biological hazards
21-Aug-20	7:15	Rob Neff	48 to 86F	Sunny and smokey	Daily site checks, daily parameters, Waterfowl survey,		Operating dry vault pumps, north and south lines.	CO2 OFF		Distracted driving at work
22-Aug-20	9:15	Steve Lubick	49 to 87 F	Smokey calm	Daily site checks, Daily parameters, weekend checks		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
23-Aug-20	9:20	Steve Lubick	48 to 87 F	Clear calm	Daily site checks, Daily parameters, weekend checks		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
24-Aug-20	8:00	Taylor Stanich	49 to 84F	Smokey calm	Daily site checks, Daily parameters, Weekly sampling, MSD site/generator checks, Waterfowl survey, Close out weekly emms tasks		Operating dry vault pumps, north and south lines.	CO2 OFF		Weekly sampling review sds for HN03
25-Aug-20	8:50	Taylor Stanich/Kaleb Ferriter	46 to 78F	Smokey, calm	Daily site checks, Daily parameters, WCP and IPS site/generator checks, 3Q inspections, waterfowl survey		Operating dry vault pumps, north and south lines.	CO2 OFF		Thunderstorms - 30/30 rule
26-Aug-20	8:25	Taylor Stanich	47 to 75F	Smokey, calm	Daily site checks, Daily parameters, BRW staff gauge monitoring, waterfowl survey		Operating dry vault pumps, north and south lines.	CO2 OFF		Unhealthy air quality

27-Aug-20	9:30	Taylor Stanich	48 to 75F	Overcast, rain showers	Daily stie checks, Daily parameters, Weekly sampling, waterfowl survey, Weekly epa summary report	JCI-lime Delivery	Operating dry vault pumps, north and south lines.	CO2 OFF		Rain showers forecasted-proper clothing
28-Aug-20	9:15	Taylor Stanich	44 to 80F	Sunny, hazy	Daily site checks, Daily parameters, waterfowl survey, 3Q lagoon elevations		Operating dry vault pumps, north and south lines.	CO2 OFF		hand tool safety
29-Aug-20	8:45	Kaleb Ferriter	48 to 89F	Sunny, hazy	Dailsite checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
30-Aug-20	6:45	Kaleb Ferriter	46 to 67F	Mostly sunny	Daily site checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
31-Aug-20	10:15	Taylor Stanich	44 to 58F	Overcast, rain showers	Daily site checks, Daily parameters, Weekly sampling, MSD site/generator checks, Waterfowl survey, Close out weekly emms tasks		Operating dry vault pumps, north and south lines.	CO2 OFF		Weekly sampling review sds for HN03
1-Sep-20	8:30	Taylor Stanich/Kaleb Ferriter	44 to 75F	sunny	Daily site checks, daily parameters, WCP and IPS site/generator checks, Waterfowl survey, Lagoons valve cycling/inspections		Operating dry vault pumps, north and south lines.	CO2 OFF		Rain weather - proper clothing
2-Sep-20	8:50	Taylor Stanich	48 to 80F	mostly sunny, windy	Daily site checks, Daily parameters, BRW staff gauges, Waterfowl survey, site building maintenance		Operating dry vault pumps, north and south lines.	CO2 OFF		Earth quake readiness
3-Sep-20	9:25	Taylor Stanich	49 to 80F	Mostly sunny	Daily site checks, Daily parameters, Weekly sampling, Waterfowl survey, weekly EPA summary report		Operating dry vault pumps, north and south lines.	CO2 OFF		Social distancing
4-Sep-20	9:20	Taylor Stanich	49 to 85F	Clear, Sunny	Daily site checks, Daily parameters, waterfowl survey,		Operating dry vault pumps, north and south lines.	CO2 OFF		Hygiene, wash hands
5-Sep-20	7:00	Rob Neff	45 to 91F	Partly cloudy	Daily site checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
6-Sep-20	7:30	Rob Neff	46 to 82F	Mostly sunny	Dailsite checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
7-Sep-20	7:00	Rob Neff	23 to 50F	Overcast, Rain shower windy	Daily site checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Labor day holiday weekend check
8-Sep-20	8:40	Taylor Stanich, Kaleb Ferriter	32 to 54F	sunny	Dailsite checks, daily parameters, weekly sampling, Wcp/ips/msd site and generator inspection, water fowl survey		Operating dry vault pumps, north and south lines.	CO2 OFF		cooler temps - proper clothing
9-Sep-20	9:30	Taylor Stanich	28 to 66	clear, sunny	Daily site checks, Daily parameters, BRW staff gauge monitoring, waterfowl survey, Monthly operations meeting, monthly fire extinguisher inspections		Operating dry vault pumps, north and south lines.	CO2 OFF		Monthly fire extinguishers
10-Sep-20	7:50	Taylor Stanich	32 to 70F	clear, sunny	Daily site checks, Daily parameters, weekly sampling, waterfowl survey, clean distrabution channels, weekly epa summary report, removed weeds in HCC	JCI Lime delivery	Operating dry vault pumps, north and south lines.	CO2 OFF		Weekly sampling review sds for HN03
11-Sep-20	8:20	Taylor Stanich	36 to 75F	Clear, sunny	Daily site checks, Daily parameters, waterfowl survey, Lime silo cleaning, clean ops building, update lao dialer	JCI dredge ops setup/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF		Review SOP for Lime silo cleaning
12-Sep-20	10:00	Jesse Sims	40 to 82F	Clear Sunny	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
13-Sep-20	13:00	Jesse Sims	38 to 81F	Hazy, Sunny	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
14-Sep-20	7:30	Rob Neff, Steve Lubick	39 to 84F	Hot & smokey	Daily site checks, Daily parameters, weekly sampling, waterfowl survey,	JCI dredge ops setup/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF	Jesse Bryant - PTS	Bad Air Quality
15-Sep-20	9:00	Kaleb Ferriter		Smokey	Daily site checks, daily parameters, waterfowl survey, wcp and ips site/gen check, msd site/gen inspection	JCI dredge ops setup/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF	Jesse Bryant - PTS	Hydration

16-Sep-20	8:45	Taylor Stanich	46 to 80F	Smokey	Daily site checks, Daily parameters, Waterfowl survey, BRW staff gauge monitoring, Dredge operations oversight	JCI dredging A1, JCI D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF	Jesse Bryant - PTS	Social distancing
17-Sep-20	8:25	Taylor Stanich	42 to 75F	smokey	Daily site checks, Daily parameters, Weekly sampling, Waterfowl survey, Silt curtain inspections, removed weeds along HCC	JCI dredging A1/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF	Jesse Bryant - PTS	Contractors on site
18-Sep-20	8:50	Taylor Stanich	46 to 78F	smokey	Daily site checks, Daily parameters, waterfowl survey		Operating dry vault pumps, north and south lines.	CO2 OFF		Biological hazards
19-Sep-20	8:00	Steve Lubick	30 to 59 F	Rain showers	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
20-Sep-20	9:30	Steve Lubick	31 To 62 F	Overcast rain showers	Daily site checks, Daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
21-Sep-20	9:15	Taylor Stanich	36 to 71F	Clear, sunny	Daily site checks, daily parameters, Monthly compliance sampling, waterfowl survey, Dredge ops oversight, D4 boat ramp oversight, MSD site generator checks	JCI dredging A1/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
22-Sep-20	8:45	Taylor Stanich, Kaleb Ferriter	37 to 73F	Mostly sunny	Daily site checks, daily parameters, waterfowl survey, WCP and IPS generator/site checks, Montior dredge operations	JCL dredging A1, moved to B1/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF	Jesse Bryant - PTS	sanitation
23-Sep-20	8:30	Taylor Stanich	42 to 75F	Mostly sunny, hazy	Daily site checks, Daily parameters, BRW staff gauges, Waterfowl survey, site building maintenance, emergency response table top exercise	JCI dredging B1/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF		Emergency response tabletop
24-Sep-20	8:30	Taylor Stanich, Kaleb Ferriter	35 to 60F	Sunny, hazy	Daily site checks, daily parameters, weekly sampling, weekly epa summary report, waterfowl survey, emergency response tabletop exercise	JCL dredging B1/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF		Unhealthy air quality
25-Sep-20	9:45	Taylor Stanich	35 to 58F	Overcast	Daily site checks, Daily parameters, Upddate lao dialer, decant water from north drying bed		Operating dry vault pumps, north and south lines.	CO2 OFF		Changing weather conditions
26-Sep-20	12:00	Kaleb Ferriter	28 to 53F	Cloudy	Daily site checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
27-Sep-20	8:15	Kaleb Ferriter	32 to 42F	Mostly cloudy	Daily site checks, daily parameters		Operating dry vault pumps, north and south lines.	CO2 OFF		Working alone - communication
28-Sep-20	10:30	Taylor Stanich	34 to 60F	mostly sunny	Daily site checks, Daily parameters, Weekly sampling, MSD site/generator checks, MSD subdrain downloads	JCI dredging B1/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF	Jesse Bryant - PTS	Weekly sampling review sds for HN03
29-Sep-20	13:45	Taylor Stanich, Kaleb Ferriter	35 to 72F	mostly sunny	daily site checks, Daily parameters, WCP and ips site/generator checks, MSD subdrain sampling	JCI dredging B1/started move to C/D4 boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF	Jesse Bryant - PTS	Review SOP for MSD Subdrain sampling
30-Sep-20	9:15	Taylor Stanich	38 to 70F	Clear, sunny	daily site checks, Daily parameters, BRW staff gauge monitoring, waterfowl survey, monitor dredge ops,	JCI dredging C1/D4 Boat ramp	Operating dry vault pumps, north and south lines.	CO2 OFF	Jesse Bryant - PTS	Continuing social distancing



**Butte Treatment Lagoons
Operator SOP Training Log**

Operator: Robert Neff

SOP Number	SOP Title	Operator Trained on Procedure (Date)	Operator Demonstrated Procedure (Date)	Supervisor Observing Procedure (Initials)	Operator Re-Trained on Procedure (Date)	Operator Annual Refresher (Date)	Notes/Comments, etc.
SOP	Procedure Title						
1	Chemical Addition System (CAS) Building Initial Arrival Operation Status Check	January-17	February-17	BH	July-17	April, 2020	
2	Daily Lower Area One (LAO) Cell Sampling and Analyzing.	January-17	February-17	BH	July-17	April, 2020	
3	Gravimetric Lime Addition System Startup.	February-17	March-17	BH	May, 2020		
4	West Camp Weekly Operations Check Procedure.	January-17	February-17	BH	July-17	May-19	
5	Metro Storm Drain Daily Inspection and Startup.	January-17	February-17	BH	July-17	October-19	
6	Influent Pump Station Startup.	February-17	March-17	BH	July-17	May, 2020	
7	Slurry Tank Feed Water Re-establishment.	February-17	March-17	BH			
8	Lower Area One (LAO) Lime Weighing Procedure						
9	Generator Inspection.	January-17	February-17	BH	July-17	May-19	
10	Screw Conveyor Cleaning.	January-17	February-17	BH			
11	Stop Log Removal/Installation.						
12	Accurate Feeder Helix Modification						
13	Outlet Structure Grab Sampling.	January-17	February-17	BH	July-17	April, 2020	
14	IPS Pump and Compressor Oil Change/Greasing.	February-17					
15	Super Sax Redundant Lime Feed System Start-Up/Shutdown						
16	Super Sax Lime Loading Procedure						
17	ISCO® Automatic Composite Water Sampling Procedures.	January-17	February-17	BH	July-17	April, 2020	
18	LAO CAS Building cleaning procedure	February-17	March-17	BH	July-17	May-19	
19	Slurry Tank and Discharge Pipe Cleaning.	February-17	March-17	BH			
20	MSD Jetting.	March-17					
21	MSD Pigging.	March-17					
22	IPS Intake Screen Cleaning	January-17	February-17	BH	July-17	April, 2020	
23	Maintenance of the Freeway Wetlands	February-17	March-17	BH	July-17	May-19	
24	Effluent Grab Sample.	January-17	February-17	BH	July-17	May-19	
25	Startup/Shutdown/Emergency Shutdown Procedure for the MSD Generator	February-17					
26	ASB Grunfos Pump Replacement/Filter Cleaning						
27	Quarterly Valve Exercise	February-17					
28	Volumetric Lime Addition Startup.						
29	UltraMeg Flowmeter Maintenance						
30	BRW Staff Gauge Monitoring	February-17	March-17	BH	July-17	May-19	
31	MSD Dry Vault Monitoring and Dewatering	January-17	February-17	BH	July-17	May-19	
32	Relay Switch Replacements						
33	LAO Dialer Alarm Callout Update.	February-17	March-17	BH	October-19		
34	LAO Security Procedures	January-17	February-17	BH	July-17	April, 2020	
35	Calibrate Accurate Feeder.	February-17					
36	Calibrate pH meter	January-17	February-17	BH	July-17	April, 2020	
37	Lime Silo Cleaning.	February-17	March-17	BH	July-17	April, 2020	
38	Air Compressor Maintenance.	February-17	March-17	BH			
39	Quarterly Level Transducer Verification	February-17	May-19	TS			
40	Screw Conveyor Oil Change						
41	ISCO Automatic Sampler Programming/ Cleaning	January-17	February-17	BH	May-19	April, 2020	
42	WCP-I Stop/Restart.	February-17	March-17	BH			
43	Solenoid Air Cylinder Replacement-Salina Knife Gate						
44	WCP H2S Alarm Response.	January-17	February-17	BH	May-19		
45	CO2 Addition Monitoring/Adjustment	January-17	February-17	BH	October-19		
46	MSD Loading Study Sampling/Transducer Downloading	February-17	March-17	BH	July-17	April-19	
47	Site Overview Inspections	February-17	May-19	TS			
48	MSD Pump Station Start Up/Shut Down.	January-17	February-17	BH			
49	Transducer Verification/Replacement	February-17	May-19	TS			
50	Monthly Fire Extinguisher/Eye Wash Inspections	February-17	March-17	BH	July-17	May-19	

Employee Signature: Signature on Hard Copy

Date: _____



**Butte Treatment Lagoons
Operator SOP Training Log**

Operator: Steve Lubick

SOP Number	SOP Title	Operator Trained on Procedure (Date)	Operator Demonstrated Procedure (Date)	Supervisor Observing Procedure (Initials)	Operator Re-Trained on Procedure (Date)	Operator Annual Refresher (Date)	Notes/Comments, etc.
SOP	Procedure Title						
1	Chemical Addition System (CAS) Building Initial Arrival Operation Status Check	January-15	February-15	BH	April-19	April, 2020	
2	Daily Lower Area One (LAO) Cell Sampling and Analyzing.	January-15	February-15	BH	April-19	April, 2020	
3	Gravimetric Lime Addition System Startup.	January-15	February-15	BH			
4	West Camp Weekly Operations Check Procedure.	February-17	March-17	BH	June, 2020		
5	Metro Storm Drain Daily Inspection and Startup.	January-15	February-15	BH			
6	Influent Pump Station Startup.	January-15	February-15	BH			
7	Slurry Tank Feed Water Re-establishment.	January-15	February-15	BH			
8	Lower Area One (LAO) Lime Weighing Procedure						
9	Generator Inspection.	February-17	March-17	BH			
10	Screw Conveyor Cleaning.						
11	Stop Log Removal/Installation.						
12	Accurate Feeder Helix Modification						
13	Outlet Structure Grab Sampling.	January-15	February-15	BH	April-19	April, 2020	
14	IPS Pump and Compressor Oil Change/Greasing.						
15	Super Sax Redundant Lime Feed System Start-Up/Shutdown						
16	Super Sax Lime Loading Procedure						
17	ISCO® Automatic Composite Water Sampling Procedures.	January-15	February-15	BH	April-19	April, 2020	
18	LAO CAS Building cleaning procedure						
19	Slurry Tank and Discharge Pipe Cleaning.						
20	MSD Jetting.	Sept-15	April-16	BH	April-19	April, 2020	
21	MSD Pigging.						
22	IPS Intake Screen Cleaning	January-15	February-15	BH	May-19	April, 2020	
23	Maintenance of the Freeway Wetlands	May-19					
24	Effluent Grab Sample.	January-15	February-15	BH	April-19	April, 2020	
25	Startup/Shutdown/Emergency Shutdown Procedure for the MSD Generator						
26	ASB Grunfos Pump Replacement/Filter Cleaning						
27	Quarterly Valve Exercise						
28	Volumetric Lime Addition Startup.						
29	UltraMeg Flowmeter Maintenance						
30	BRW Staff Gauge Monitoring	May-19					
31	MSD Dry Vault Monitoring and Dewatering	January-15	February-15	BH	April-19	April, 2020	
32	Relay Switch Replacements						
33	LAO Dialer Alarm Callout Update.	May-19	October-19	TS			
34	LAO Security Procedures	January-15	February-15	BH	April-19	April, 2020	
35	Calibrate Accurate Feeder.						
36	Calibrate pH meter	January-15	February-15	BH	April-19	April, 2020	
37	Lime Silo Cleaning.						
38	Air Compressor Maintenance.						
39	Quarterly Level Transducer Verification						
40	Screw Conveyor Oil Change						
41	ISCO Automatic Sampler Programming/ Cleaning	April, 2020					
42	WCP-1 Stop/Restart.	January-15	February-15	BH	June, 2020		
43	Solenoid Air Cylinder Replacement-Salina Knife Gate						
44	WCP H2S Alarm Response.	January-15	February-15	BH			
45	CO2 Addition Monitoring/Adjustment	January-15	February-15	BH	October-19		
46	MSD Loading Study Sampling/Transducer Downloading						
47	Site Overview Inspections						
48	MSD Pump Station Start Up/Shut Down.	January-15	February-15	BH	April-19		
49	Transducer Verification/Replacement						
50	Monthly Fire Extinguisher/Eye Wash Inspections						

Employee Signature: Signature on Hard Copy

Date: _____



**Butte Treatment Lagoons
Operator SOP Training Log**

Operator: Taylor Stanich

SOP Number	SOP Title	Operator Trained on Procedure (Date)	Operator Demonstrated Procedure (Date)	Supervisor Observing Procedure (Initials)	Operator Re-Trained on Procedure (Date)	Operator Annual Refresher (Date)	Notes/Comments, etc.
SOP	Procedure Title						
1	Chemical Addition System (CAS) Building Initial Arrival Operation Status Check	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
2	Daily Lower Area One (LAO) Cell Sampling and Analyzing.	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
3	Gravimetric Lime Addition System Startup.	Jan. 2019	April-19	BH	November-19	April. 2020	
4	West Camp Weekly Operations Check Procedure.	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
5	Metro Storm Drain Daily Inspection and Startup.	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
6	Influent Pump Station Startup.	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
7	Slurry Tank Feed Water Re-establishment.	Feb. 2018	April-19	BH	November-19	April. 2020	
8	Lower Area One (LAO) Lime Weighing Procedure						
9	Generator Inspection.	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
10	Screw Conveyor Cleaning.	July-18	June. 2020	BH			
11	Stop Log Removal/Installation.	Mar. 2018	June-19	BH	June. 2020	July. 2020	
12	Accurate Feeder Helix Modification	Jan. 2019	April-19	BH			
13	Outlet Structure Grab Sampling.	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
14	IPS Pump and Compressor Oil Change/Greasing.	Mar. 2018					
15	Super Sax Redundant Lime Feed System Start-Up/Shut Down						
16	Super Sax Lime Loading Procedure						
17	ISCO® Automatic Composite Water Sampling Procedures.	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
18	LAO CAS Building cleaning procedure	Mar. 2018	Aug. 2018	BH	April-19	April. 2020	
19	Slurry Tank and Discharge Pipe Cleaning.	Mar. 2018	April. 2020	BH	July. 2020		
20	MSD Jetting.						
21	MSD Pigging.	April-18	Oct. 2018	BH	April-19	April. 2020	
22	IPS Intake Screen Cleaning	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
23	Maintenance of the Freeway Wetlands	Feb. 2018	Aug. 2018	BH	April-19	July. 2020	
24	Effluent Grab Sample.	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
25	Startup/Shut Down/Emergency Shutdown Procedure for the MSD Generator						
26	ASB Grunfos Pump Replacement/Filter Cleaning	Feb. 2018	Dec. 2018	BH	April-19	April. 2020	
27	Quarterly Valve Exercise	Dec. 2017	Mar. 2018	BH	November-19		
28	Volumetric Lime Addition Startup.	Jan. 2019					
29	UltraMeg Flowmeter Maintenance	Sept. 2019	July. 2020	BH			
30	BRW Staff Gauge Monitoring	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
31	MSD Dry Vault Monitoring and Dewatering	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
32	Relay Switch Replacements						
33	LAO Dialer Alarm Callout Update.	Jan. 2019	October-19	BH	April. 2020		
34	LAO Security Procedures	Jan. 2018	Aug. 2018	BH	April-19	April. 2020	
35	Calibrate Accurate Feeder.	June-18	April-19	BH	November-19	Dec. 2019	
36	Calibrate pH meter	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
37	Lime Silo Cleaning.	Jan. 2018	June-18	BH	April-19	April. 2020	
38	Air Compressor Maintenance.	Mar. 2018	November-19	BH	May. 2020		
39	Quarterly Level Transducer Verification	Dec. 2017	Mar. 2018	BH	May-20	June. 2020	
40	Screw Conveyor Oil Change	April-19					
41	ISCO Automatic Sampler Programming/ Cleaning	Jan. 2018	Feb. 2018	BH	April-19	April. 2020	
42	WCP-1 Stop/Restart.	April-19	May. 2020	BH	Aug. 2020		
43	Solenoid/Air Cylinder Replacement-Salina Knife Gate						
44	WCP H2S Alarm Response.	Dec. 2017	Jan. 2018	BH	April-19	May. 2020	
45	CO2 Addition Monitoring/Adjustment	Dec. 2017	Jan. 2018	BH	Jan. 2020	Sept. 2020	
46	MSD Loading Study Sampling/Transducer Downloading	Dec. 2017	Jan. 2018	BH	April-19	April. 2020	
47	Site Overview Inspections	Dec. 2017	Mar. 2018	BH	Nov. 2019	May. 2020	
48	MSD Pump Station Start Up/Shut Down.	April-19	October-20	BH	May. 2020	April. 2020	
49	Transducer Verification/Replacement	Mar. 2018	June-18	BH	May-19	May. 2020	
50	Monthly Fire Extinguisher/Eye Wash Inspections	Dec. 2017	Jan. 2018	BH	April-19	June. 2020	

Employee Signature: Signature on Hard Copy

Date: _____



**Butte Treatment Lagoons
Operator SOP Training Log**

Operator: Kaleb Ferriter

SOP Number	SOP Title	Operator Trained on Procedure (Date)	Operator Demonstrated Procedure (Date)	Supervisor Observing Procedure (Initials)	Operator Re-Trained on Procedure (Date)	Operator Annual Refresher (Date)	Notes/Comments, etc.
SOP	Procedure Title						
1	Chemical Addition System (CAS) Building Initial Arrival Operation Status Check	Feb. 2020	April. 2020	TS			
2	Daily Lower Area One (LAO) Cell Sampling and Analyzing.	Feb. 2020	April. 2020	TS			
3	Gravimetric Lime Addition System Startup.						
4	West Camp Weekly Operations Check Procedure.	Feb. 2020	April. 2020	TS			
5	Metro Storm Drain Daily Inspection and Startup.	April. 2020					
6	Influent Pump Station Startup.						
7	Slurry Tank Feed Water Re-establishment.						
8	Lower Area One (LAO) Lime Weighing Procedure						
9	Generator Inspection.	Feb. 2020	April. 2020	TS			
10	Screw Conveyor Cleaning.	July. 2020					
11	Stop Log Removal/Installation.						
12	Accurate Feeder Helix Modification						
13	Outlet Structure Grab Sampling.	Feb. 2020	April. 2020	TS			
14	IPS Pump and Compressor Oil Change/Greasing.						
15	Super Sax Redundant Lime Feed System Start-Up/Shutdown						
16	Super Sax Lime Loading Procedure						
17	ISCO® Automatic Composite Water Sampling Procedures.	April. 2020					
18	LAO CAS Building cleaning procedure	July. 2020					
19	Slurry Tank and Discharge Pipe Cleaning.	Mar. 2020	June. 2020	TS			
20	MSD Jetting.						
21	MSD Piggings.						
22	IPS Intake Screen Cleaning	Feb. 2020	April. 2020	TS			
23	Maintenance of the Freeway Wetlands	July. 2020					
24	Effluent Grab Sample.	Feb. 2020	April. 2020	TS			
25	Startup/Shutdown/Emergency Shutdown Procedure for the MSD Generator						
26	ASB Grunfos Pump Replacement/Filter Cleaning						
27	Quarterly Valve Exercise	Mar. 2020	June. 2020	TS			
28	Volumetric Lime Addition Startup.						
29	UltraMeg Flowmeter Maintenance						
30	BRW Staff Gauge Monitoring	Feb. 2020	April. 2020	TS			
31	MSD Dry Vault Monitoring and Dewatering	Mar. 2020					
32	Relay Switch Replacements						
33	LAO Dialer Alarm Callout Update.						
34	LAO Security Procedures	Feb. 2020	April. 2020	TS			
35	Calibrate Accurate Feeder.						
36	Calibrate pH meter	Feb. 2020	April. 2020	TS			
37	Lime Silo Cleaning.	Feb. 2020	July. 2020	TS			
38	Air Compressor Maintenance.						
39	Quarterly Level Transducer Verification	Mar. 2020	June. 2020	TS			
40	Screw Conveyor Oil Change						
41	ISCO Automatic Sampler Programming/ Cleaning	April. 2020					
42	WCP-1 Stop/Restart.						
43	Solenoid/Air Cylinder Replacement-Salina Knife Gate						
44	WCP H2S Alarm Response.	Feb. 2020					
45	CO2 Addition Monitoring/Adjustment	Feb. 2020					
46	MSD Loading Study Sampling/Transducer Downloading	Mar. 2020	April. 2020	TS			
47	Site Overview Inspections	Mar. 2020	June. 2020	TS			
48	MSD Pump Station Start Up/Shut Down.						
49	Transducer Verification/Replacement	Mar. 2020	June. 2020	TS			
50	Monthly Fire Extinguisher/Eye Wash Inspections	Feb. 2020	April. 2020	TS			

Employee Signature: Signature on Hard Copy

Date: _____